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UNIVERSITY OF ALBERTA

A DESCRIPTIVE ANALYSIS OF THE DEVELOPMENT OF HIGHER TECHNICAL EDUCATION IN BAHRAIN

BY

KATHY T. HIGGINS ©

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
AND RESEARCH IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF
EDUCATION IN
INTERNATIONAL/INTERCULTURAL EDUCATION

DEPARTMENT OF EDUCATIONAL FOUNDATIONS

EDMONTON, ALBERTA

SPRING 1993

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UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "A Descriptive Analysis of the Development of Higher Technical Education in Bahrain" submitted by Kathy T. Higgins in partial fulfillment of the requirements for a degree of Master of Education in International/Intercultural Education.

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Dr. S.H. Toh

Date: April 07, 1993

Abstract

The purpose of this study was to provide a descriptive analysis of the development of higher technical and vocational education in Bahrain as it attempts to meet the growing demands of the country's economy. Specifically, the intention was to assess the program developments at the Gulf Polytechnic in Bahrain, leading up to 1985 when significant curriculum changes occurred.

A major source of information was the Ryerson Polytechnical Institute's (RPI) assessment and evaluation study of engineering programs at the Gulf Polytechnic. Information was also researched as to the social, political, historical and economic background of Bahrain which greatly impacted the likelihood that technical and vocational education would succeed.

The research found that Bahrain had ambitious plans for modernization and development and that trained manpower shortages existed in Bahrain as a result of rapid economic development and the Government's plans to "Bahrainize" the workforce. The role of education in general and the success of technical and vocational education in particular, were critical to Bahrain's current and future modernization activities.

However, major problems and constraints, such as a preference for university education, the lack of status afforded to technical education, insufficient financial incentives and relevancy of curriculum, had prevented

technical and vocational education from being an effective contributor to the development process.

Based on recommendations from the RPI study, a new model for engineering education was approved and implemented at Gulf Polytechnic. This model was unlike traditional models used elsewhere in the region and was characterized by a new common orientation year, a work placement component in the degree program and the collapsing of the diploma and the degree streams into one program.

These program changes diminished and in some cases eliminated a number of the problems associated with technical and vocational education. The model, therefore, has application possibilities in the successful development of higher technical and vocational education in developing countries.

On the basis of this study a number of recommendations were made: adjusting the reward structure for technical and vocational graduates, recognizing the importance of status and credentialism in higher education, and maintaining the practical focus of programs. One of the most important recommendations is that curriculum changes cannot be made in isolation from the social, political, and economic environments.

Acknowledgement

I owe gratitude to my family, friends and colleagues who have supported me during this research. I would like to give special thanks to my thesis supervisor for his patience and encouragement, and to the faculty and staff of the Department of Educational Foundations, who I believe truly embody the spirit of learning. Thanks also to my friends, in particular Daniel Schugurenski and Carmen Largaespada who would not let me forget my research. Finally, to my family; my sister Maureen who has always cheered me onwards, to my son Daniel, for giving up all those family days and finally to Bill whose love and support carried me across the line.

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CHAPTER 1

Introduction to the Study

1.1 The Problem

In recent years many Third World countries have embarked upon ambitious plans for modernization. In keeping with the human capital theory, which supports the investment in "human resources" as a means of achieving this goal, education was greatly expanded, especially during the three decades from 1950 to 1980. The universities, in particular, played a significant role in these efforts by supplying highly skilled manpower for these modernization efforts.

However, major cracks have appeared in the theory and the link between education and development is being seriously questioned. This is due partly to the increasing number of unemployed graduates coupled with the fact that skill shortages continue to exist alongside these educated unemployed.

This situation has forced governments to reassess the role of education, particularily that of higher education in development and to question whether or not the traditional forms of higher education can in fact be a more effective contributor to the process.

In recent years, polytechnic education, or career-oriented postsecondary education, has been put forward as an alternative to traditional university education because it is seen to be a more appropriate and relevant education for the needs of development. Attempts to vocationalize higher education in order to make it more relevant, however, have met with limited success.

1.2 The Problem Statement

To date, there are few studies that describe successful attempts of vocationalizing the curriculum in developing countries. Bahrain, a developing country well on its way to modernization, is an example of a country that, faced with similar problems as other developing nations, has systematically built up its postsecondary education in a way that overcomes many of the obstacles facing technical and vocational education.

1.3 Purpose of the Study

The purpose of this study is to provide a descriptive analysis of the development of higher technical and vocational education in Bahrain as it strives to meet the growing demands from the economy. The intention is to assess the development of the higher education system in Bahrain leading up to 1985 when significant changes occurred. This involves a review of Gulf Polytechnic, where attempts to vocationalize curriculum had resulted in the development of a model which is unlike traditional models used elsewhere in the region. This study describes the major features of a re-structured program and assesses how the model addresses many of the barriers facing technical and vocational education.

Because education does not exist in a vacuum, the study also provides a descriptive analysis of the social, political, historical backgrounds which greatly impacts the likelihood that technical and vocational education will succeed. This involves identifying the major problems and constraints to technical and vocational education in the Middle East in general and Bahrain in particular. Failures in vocationalizing the curriculum have often occurred, not as a result of faulty curriculum, but because of the influence of other factors that lay outside the educational sphere. Through this review barriers as well as opportunities are identified that assist or hinder the development of successful technical and vocation education.

1.4 Objectives of the Study

1. to analyse the social, economic and cultural context in Bahrain in which education takes place and identify the constraints and opportunities that these areas present.

2. to determine the major development theories and the role that education plays within them. As well, to identify the model that Bahrain is pursuing and the problems and barriers to success within the model.

3. to describe the education system in Bahrain with specific reference to the problems with technical and vocational education in Bahrain and the surrounding Gulf area.

4. to evaluate the attempts at curriculum change at the Gulf Polytechnic with specific reference to the assessment of engineering programs that resulted in a new model for engineering curriculum.

1.5 Significance of the Study

Bahrain is a example of a country that has systematically built up its postsecondary education in a way that overcomes many of the obstacles facing technical and vocational education. Bahrain offers many lessons to be learnt in the development of technical and vocational education that could be used elsewhere for the development of appropriate human resources.

1.6 Research Questions

This study answers the following questions:

- What is the real need for technical and vocational graduates in Bahrain?
- What are the manpower shortages in Bahrain?
- What is the role of higher education in development?
- What is the status of technical and vocational education in reference to university education? How important are

credentialism and status to the success of technical and vocational education?

- How has the present educational system been influenced by past developments? What role is it expected to play in the future?
- How can one ensure that curriculum is relevant and appropriate?
- What are the major barriers to technical and vocational education in Bahrain and the Middle East.
- How does Gulf Polytechnic's (G.P.) curriculum differ from other technical and vocational institutions?
- How has the re-structured model of technical education at G.P. addressed any of the identified problems and barriers to successful polytechnic education.

1.7 Methodology

1.7.1 Data Collection

The following methods were employed in this research study:

i. Documentation: Because of the nature of the study, most of the data was obtained from existing sources. The major origins of documents and statistics were acquired from:

a) Government of Bahrain

Gulf Polytechnic (also includes correspondence, memos and other written documents from governments and Polytechnic sources)

b) News Agencies

c) International Consultant Reports
  - American University of Beirut
  - Ryerson International Development Centre (RIDC)
  - Individual consultants

d) Private Documentation

- For example, field notes and interviews from international consultants.

e) RIDC Assessment and Evaluation of Engineering Programs at the Gulf Polytechnic

- A major source of information was the assessment and evaluation of engineering programs carried out at the Gulf Polytechnic over a period of fourteen month in 1983 and 1984. During this time, five evaluation visits to Bahrain were conducted by members of the RIDC assessment team who worked with their Bahraini counterparts. A major element of the first phase of the assessment was the production of a set of evaluation instruments to be employed during the on-site program assessment. These instruments included: the Program Assessment Framework, the Program Structure Evaluation Summary, the Course Evaluation Instrument and the Academic Program Dossier.

The second phase involved the process of evaluating all of the aspects of academic activity at G.P., as well as examining the linkages between the polytechnic and schools, and the principal employers.

In phase three of the assessment a series of alternative scenarios for academic development was presented to the Board of Trustees of G.P. with a recommendation of a preferred option.

The author was employed at the Ryerson International Development Centre and was a active member of the research team conducting this study. The principal activities in which she was engaged included literature review, research coordination, data analysis, administrative support and final report preparation.

ii. Interviewing: This method was used by the researcher to gather first-hand data from the research team who carried out the RIDC study.

The interviews were conducted in Toronto by way of an unstructured interviewing method. In order to gain general information, questions on basic themes were asked (see copy of interview questions in Appendix 1). The interviewees were encouraged to speak freely and openly regarding what they felt were the important issues and questions regarding technical and vocational education and its role in the development of Bahrain.

iii. Secondary Analysis of Survey Data: Surveys have been conducted by international consultants, such as RIDC, in several areas pertaining to the research question. The results, along with the technical report of the assessment design were available for this research.

1.7.2 Data Analysis

The data analysis varied in accordance with the different sources used. The majority of the research was conducted and data analysed, in Edmonton, from documents from Bahrain and Toronto. A three month field trip to Toronto was made by the researcher to obtain additional documentation and to conduct the interviews.

Most of the documentation analysis involved summarizing information, determining philosophical underpinnings, rationale and justifications.

1.8 Definition of Terms

UNESCO defines technical and vocational education as follows:

a) technical education - education designed at upper secondary and lower tertiary levels to prepare middle-level personnel (technicians, middle management, etc.) and at university level to prepare engineers and technologists for higher management positions. Technical education includes general education, theoretical, scientific and technical studies and related skills training.

b) vocational education - is designed to prepare skilled personnel with lower levels of qualification for one or a group of occupations, trades or jobs. Vocational education, usually provided at the upper secondary level, includes general education, practical and related theoretical training for the development of skills required by the chosen occupation. The emphasis is usually on practical training.

1.9 Limitations of the Study

The outcomes of this study might not be generally applicable to all developing nations due to the unique cultural and financial environment of Bahrain.

1.10 Method of Exposition

The following is an outline of the various chapters in this thesis.

Chapter one introduces the project, including its scope and design. The chapter also introduces Bahrain, providing an overview of the past and present social, economic and political environments.

Chapter two contains the literature review which discusses the major theories of development and the role that education plays within them. Specific reference is made to Bahrain and the constraints that it faces in the successful development of technical and vocational education.

Chapter three provides a detailed discussion on the development of education in Bahrain and the problems that have been encountered in the area of technical and vocational education.

In Chapter four an assessment of engineering programs which lead to major re-structuring of curriculum is described and analysed. The new model is evaluated for its potential in addressing many of the problems associated with technical and vocational education.

The final chapter includes the summary, implications and recommendations of the research.

1.11 Introduction To Bahrain

The remainder of this chapter introduces Bahrain by way of developing the context that the study is found.

Bahrain has been engaged in dramatic and rapid economic, social and educational changes for the past two decades. Throughout this time there has been a constant attempt to find a way to blend the traditions of the Arab and Islamic cultures with the values of the advanced industrialized societies. As a result of the governments' ambitious plans for modernization, Bahrain is now decidedly modern in most outward appearances. This can be seen in its well-known international airport, major shipping facility etc. However, when social and economic indicators are reviewed in detail, this successful modernization may be difficult to sustain.

First, oil production is declining and will be depleted within the foreseeable future. Second, the government relies heavily on grants and gifts from Arab neighbours. And third, Bahrain's expatriate population is one-third of its total population and comprises approximately fifty percent of the work force. A most serious problem today is the acute shortage of professionally qualified personnel and skilled workers among Bahrain's indigenous population. Present supply cannot meet the demand created by such rapid growth and continuing industrial expansion. To address this problem, the educational system is being extended rapidly in an effort to prepare Bahrainis for the many skilled and professional level positions held by expatriates. Today the percentage of young Bahrainis who are receiving a post-secondary education, both at home and abroad, is quite high. However, the areas in which education are being sought, are often not those areas that are most urgently required (i.e. scientific and technical). Therefore, despite the impressive amount of educational investment, the demands of the growing economy are not being met by nationals and Bahrain continues to hire personnel from foreign countries.

Dependence on such large numbers of expatriates not only drains the economy, but also imposes restrictions on their future plans for expansion. Further, the problem of low participation of nationals in the work-place is more severe and acute at the top executive and managerial levels than at the clerical and manual labour levels in all spheres of the manufacturing and service industries as well as the civil service.

In short, the development challenge in Bahrain is less a problem of the lack of financial capital, as in many nations, but rather of human resource development (Nugent and Thomas, 1985). Because Bahrain is relatively poor in oil reserves, emphasis needs to be given to alternative policies, development strategies and human resource plans. Therefore, human resource planning is the primary development challenge for Bahrain's development.

This situation has not gone unnoticed by the Government which has been actively pursuing human resource development planning. Examples of this can be seen in their ambitious plans at "Bahrainization" of the work-force and their many commissioned studies both internal (Ministry of Education, Bahrain) and external (Ryerson Polytechnical Institute, Canada) regarding the academic/vocational skill mix of the present and future educational programs, especially in business management and engineering.

There are significant issues that must be addressed. How should Bahrain respond to the apparent conflict between individual demands for access to advanced degrees as opposed to market demands for immediate vocational skills? How can Bahrain develop a successful institute of higher learning in the areas of technical and vocational education?

Initially, the solution to such problems appeared quite straightforward. The education offered must be altered to better reflect the needs of the country. That is, a more appropriate education and training program would be aimed at encouraging nationals to work in all sectors of the economy, especially in the technical areas that are heavily staffed by expatriates. However, because of the past experiences of other developing countries, the many obstacles facing technical and vocational education (described in further chapters) and the prevailing attitude among nationals towards technical education, an easy or simple solution does not appear to be likely.

In an attempt to better answer these and further questions more accurately, a descriptive analysis of the past and present social, economic and political environments of Bahrain along with a brief historical and geographic sketch will follow. It is important to better understand the wider context of Bahrain before examining the question of education and the problems of technical and vocational curriculum in particular because many factors which have influenced and are still influencing the development of modern education arise from some of the deep-rooted beliefs and customs of Gulf society.

1.11.1 An Overview of the Geographical, Historical, Economic, Social and Political Background of Bahrain

Bahrain consists of a group of eleven islands with a entire land area of 663 square kilometres. It is situated approximately half-way along the Western coastline of the Gulf, off the coast of Saudi Arabia.

The modern history of Bahrain may be said to have started during the early part of the 18th Century, when a group of Arab tribes called the "Utub" emigrated from southern part of mainland Arabia and settled in Zubarah town in the north-western part of Qatar. Following many tribal conflicts between the Utub tribes and the powerful Wahhabi tribes, as well as the lure of a relatively wealthy land, one of the Utub tribes, the Al Khalifa, invaded Bahrain in 1783, and this tribe has continued its rule of the country to this day. The British became actively involved in Bahrain when tribal conflicts threatened the stability of the country. They formalized this relationship in 1820 when they made Bahrain a British protectorate. This relationship continued until 1971, when Bahrain achieved its independence (Khuri, 1980).

1.11.2 Population

The population of Bahrain is small, approximately 503,022 in 1990. Of the total, 336,165 were Bahraini citizens and one-third were expatriate workers and their families (World Bibliographical Series, 1992). The indigenous population is Arab and Muslim, divided between the Sunni (40% - 45%) and Shiah (55% -60%) sects. Of the expatriates, the largest numbers are employed as labourers and originate from South Asia (these job positions are the most difficult to Bahrainize), but professional and middle management personnel are also prominent from many diverse areas. An example of this can be seen at the Gulf Polytechnic where, in the early 1980's, more than 36 different nationalities were employed at the Institute.

In recent history, the national population has been increasing, with children making up a large proportion of the population. In 1989, 34% of the total Bahraini population was 15 years of age or less. It is anticipated that the Bahraini labour force will double by the end of the century (World Bibliographical Series, 1992). Obviously, this has particular significance for education. Recent trends and attitudes towards the use of birth control have effected the rate of population growth. This is significant because the national population is small and will quite likely remain that way. The main question to be considered here, however, is how will Bahrain provide the manpower required for the modernization and economic development projects it continues to initiate?

1.11.3 The Political Structure

Bahrain is an absolute monarchy. The monarch, from the Al-Khalifa family, and the close friends of his family occupy all the key positions and supervise various government departments. Financial power is also monopolized by the Al-Khalifa's. This system, however, has apparent support from many Bahrainis who benefit from their privileged position in society.

This structure has survived and continues to do so because it accords with the old established tribal relations and the traditional desire of the populace for a just rather than democratic government. This was witnessed in the 1950s when there was considerable labour unrest and again in the early 1970s when an experiment with elections and parliament was briefly attempted. On neither of these occasions, did leaders of the unrest question the right or desirability of the monarch. It is a widely held belief that Bahrain is not 'ready' or interested in a democracy. That is not to say that there has been no criticism of the absolute monarchy. Critics say that after the discovery of oil, the ruling family strengthened their position and authority by using the oil wealth to provide employment, social services and by distributing a proportion of this wealth to other tribes, to win support and loyalty. They were also accused of spending lavishly on propaganda machinery, a large police force and a secret service. Even with this, there still appears to be strong support for the rulers. Although the ruling family gives approval to and actively supports modernization and economic development, it is conditional on the developments remaining clearly within the framework of tribal tradition and order. This was sharply demonstrated by the brief experiment of parliament which was dissolved within a year of its inception because it was said to have prevented the Government from carrying out its functions.

1.11.4 Social Implications

Traditional Bahrain society, before the discovery of oil, consisted mainly of three social groups, the notables, merchants and commoners. The notables included the ruling family and their allies, the merchant class included the pearl merchants and traders and finally the class with the least amount of economic power included the low-ranked clergy, teachers, pearl-divers, shipbuilders, sailors, craftsmen, artisans and peasants, who were mostly of non-national origin (historically Bahrainis were not active in these economic areas).

After the discovery of oil, the rulers devised a variety of methods to create a new social order. One such method was the opportunity for members of the public to sell their land at much inflated prices than the real value (although compensation went typically to the traditional elite who were the largest land-owners to begin with). Another method was the establishment of a large bureaucratic machine. The government guaranteed a job in the public sector to every citizen who wanted one. This policy has led to the government becoming the largest employer, employing 44% of the total employment of nationals in 1987 (El-Sanabary, 1992). This policy was also seen as a way to appease the national population. It has led, however, to considerable over-staffing and low productivity in the public sector. This raises the question of whether such 'jobs' are really productive positions - or a means of welfare. If that is the case, is education really important for these tasks? Can this be afforded indefinitely? This policy alone might very well be the principal obstacle to the success of "Bahrainization" of the workplace, as will be discussed later.

The distribution of oil wealth, therefore, resulted in the creation of a powerful financial oligarchy and a large-scale welfare program designed to compensate that segment of the population most effected by the breakdown of the traditional economy. What emerged was a more or less modern class structure of a capitalist society represented by the bourgeoisie class, which includes the ruling families and the traditional notables and merchants, the middle class, which is made up of bureaucrats and civil servants and finally the skilled and unskilled working class which grew up around oil, petrochemical and construction industries and mainly consists of non-nationals.

1.11.5 The Economy - Traditional

There were no prospects for agriculture, given the desert and barren nature of the land, the arid climatic conditions and the fact that tribal origins prevented the Al Khalifa from working on the land as farmers (something which was completely unacceptable to the desert Arabs), therefore the people were forced to go into commerce (Rumaihi, 1976). The main economic activities were centered on fishing, pearling and trade.

Bahrain has always had a reputation as a commercial centre, being mainly involved in trade between mainland Arabia and the coastal African countries. The main merchandise included export of pearls from the Gulf and import of cloth, rice, coffee, tea and spices from Asian and African countries. Pearl-fishing was the dominant economic activity for most of the last 4,000 years, that is, up until the 1930's. It employed almost all the men throughout the season, which lasted from June to October. It was also important given the fact that several other major activities, such as trading and shipbuilding, were quite closely related to it. However, aside from a few rich Bahrainis (the ruling family and some merchants) the standard of living was extremely low. The pearl industry began to collapse even before the discovery of oil in 1932 due to such factors as; the international monetary crisis of 1929, which decreased the demand for luxury items, the introduction of Japan's cultured pearl industry and the competition in the labour market from petroleum. Thereafter, the pearling industry declined rapidly and by the mid-1960's pearling in the waters around Bahrain, and indeed in the entire Gulf region, was over.

1.11.6 The Economy - Modern

In modern history, few other societies have changed so rapidly in such a short period of time as this Arab Gulf society. The otherwise small and insignificant desert sheikhdom of the early 1920's is now one of the world's oil-rich nations. This dramatic change was due to the discovery of oil in 1932 and its subsequent commercial production in 1934. The income from the export of oil constitutes about 76% of the total revenues of the Government of Bahrain. As a result of commercialized oil production and its export, the gross national product per capita of Bahrain has risen from an almost negligible figure in the pre-oil period to $8,530 (U.S.$) in 1988 (Canadian International Development Agency, 1988). Oil wealth has been the main economic source used to improve the welfare of the people. However, with improvements in housing and water supplies came growing demands and aspirations for an even more lavish provisions of physical and social infrastructure and social services. By 1973, these provisions absorbed much of the oil reserve. This situation resulted in administrative problems, creating a huge government bureaucracy which employed large numbers of nationals. In this sector, wages were often paid more as a right than as a return for any particular service and as mentioned, this policy has had and continues to have, profound effects upon the society. With this kind of rapid growth and development, the transformation from traditional economy to a modern one was rapid.

However, the collapse of world petroleum prices led to reductions of revenue and a subsequent reduction of spending throughout the late 1980s. By 1991, Bahrain had a deficit of BD 118 million which was financed through domestic borrowing and bond issues (The Middle East and North Africa, 1993).

Bahrain has been more successful than most of its Gulf neighbours in developing sources of income outside its oil industry. Actually, Bahrain's relatively modest oil production has provided the country with a mixed blessing. Because of its limited oil reserves, the government has been forced to develop, on a gradual basis, a non-oil economy based on private entrepreneurship. For example, the Arabian peninsula's first aluminum smelter was located on the island in 1971 and in 1974 the Arab Shipbuilding and Repair Yard Company was opened. In 1973/74, because of the oil price increases, even more new development opportunities were created. Further, the Government evolved a strategy of offering the island as a service centre for the peninsula, particularly for Saudi Arabia. To this end, in 1976, offshore banking laws were passed. This opened the way for Bahrain to become the Gulf's principal financial centre. In the first year alone more than 32 offshore banking units (OBUs) had opened and by 1983 there were more than 60, with assets worth some $50,000 million dollars at the end of 1981 (MEED, 1983). Total profits continued to grow and at the end of 1988 Bahrain's OBUs enjoyed their best ever results at $68,100 million. Growth was disrupted however, due to the Gulf crisis and by the end of 1990 assets totalled $59,860 million with the total number of OBUs at 51 (The Middle East and North Africa, 1993).

Associated with the developing service role, the hotel industry has also grown, principally to cater for the growth in business visitors. The government has also sought to encourage light industry development by making available low-cost serviced land. Also, there are a number of projects designed to use Bahrain's plentiful reserves of low-cost natural gas as fuel and feedstock, such as the Gulf Petrochemical Industries Company. The private sector is involved in the heavy industry program in the Arab Iron and Steel Company. It is hoped that the heavy industry project will become the basis for further developments of light industry.

Despite absorbing virtually all the labour from traditional employment, the modern economic sector has suffered from a critical shortage of national manpower. This rapid economic growth and plans for modernization, however, has also brought about significant changes to the social-political structure of Bahrain. As al-Misrad (1985) comments, this transformation is historically unique in that it did not happen as a result of two conflicting modes of economic production, feudal to capitalist, nor because of the triumph of one over the other. It is neither the result of a long and slow process of social and economic transformation nor a result of agricultural and industrial progress. The transformations of this society can be directly related to the discovery of oil.

1.11.7 Manpower Needs

"Over the last decade, labour market disequilibriums have been chronic and, at times, wildly distorted in virtually every Arab country. Shortages of literate or educated manpower have been so acute that thousands of vacancies have existed side by side with structural unemployment. Employers have been forced to offer abnormal salaries merely to attract skills from abroad. While shortages are most visible in the capital-rich countries, acute scarcities in the oil-poor countries are hampering development projects as well" (Shaw, 1983).

Bahrain has embarked upon ambitious plans for modernization and development and such plans have created a great demand for skilled and trained personnel to sustain them. This has been problematic for Bahrain. First, the ability to respond to the demand is restricted by the limited potential supply of personnel - the population of Bahrain being only 503,022. Also, although one of the countries in the Gulf with the highest percentage of educated individuals, Bahrain nationals show a marked preference for non-technical and vocational education and training (Massialas and Jarrar, 1991).

The demand for skilled labour in Bahrain is now at a critical point. For Bahrain to meet its personnel requirement today, they must hire 140 expatriates for every 100 nationals employed. This personnel shortage problem is not unique to Bahrain but is witnessed by the whole Gulf region.

The major factors explaining the manpower shortage problem, for the Gulf area in general and that of Bahrain specifically, are as follows:

First, the oil-rich countries have extremely ambitious development plans all of which require a large manpower component. Between 1975 and 1980, 900,000 skilled expatriate workers were required merely to manage and operate the new infrastructure in the Gulf region. (Shaw, 1983). Bahrain's development plans in particular placed a great emphasis on human resource development. In large part this has been spurred on because of the knowledge that there is a limited amount of oil. Bahrain's income from oil is only a small fraction of that enjoyed by Saudi Arabia, Kuwait or even Qatar. Consequently, Bahraini economic development has the objective of creating wealth and raising the standard of living for the people rather than simply distributing the oil revenues (Graham & Trotman, 1983).

As a result of this, the overall economic development plans have tended to be centered around not only the extraction and refinement of indigenous oil but also the development of entrepot activities (especially those associated with a communications and commercial centre) and the creation of alternate incomes to oil revenues, particularily through the aluminum smelter and allied industries (Shaw, 1983). All these areas require substantial numbers of technically trained personnel to support them.

Although detailed manpower requirements for these activities do not readily exist, a team of educators from Ryerson Polytechnical Institute undertook a industry needs assessment in 1985 of the major employers in Bahrain (Ryerson International Development Centre, Phase II Report, 1985). In the assessment of these needs it was clearly indicated that the greatest demand was for skilled technically trained personnel, that is, technicians and technologists.

Second, grants from the oil-rich to the oil-poor countries, such as Bahrain, have added further fuel to the demand for key personnel for selective industrial projects in the Gulf region. The outcome of these shifts in resources can be seen in the location of the Arab University and the Saudi/Bahrain Aluminum Project in Bahrain and the construction of a causeway linking Bahrain to Saudi Arabia. These are examples of projects which Bahrain was able to undertake because of the attractive grants and incentives provided by the oil-rich countries.

Third, governments have been increasingly motivated to nationalize their labour force and Arabize their educational system. Bahrain's number one strategy over the next 10 years, as proposed in their recent national plan, was to gradually replace foreign workers with Bahraini nationals, especially in skilled jobs. This had fuelled the demand for Arab nationals to replace expatriates. The primary manpower goal in this effort is to increase Arab representation in the key productive sectors of research and development, teaching, manufacturing and construction (in which expatriates dominate). The primary educational goal is to protect the Arabic language and culture from succumbing to Western influence.

Bahrain has been grappling with the problems associated with the large numbers of non-nationals living in the country, particularly non-Arab nationals. For instance, in 1971 immigrant Asians accounted for about one-third of the expatriate population and just over a quarter of the work-force of non-nationals. At the same time, immigrant Arabs accounted for half the non-national population and work-force. However, between 1971 and 1977 the share of total non-national population absorbed by the Arab community fell from 45 % to 15 %, and the Asian contribution rose from 32% to 67% (Birks & Sinclair, 1980). The Asian labour now accounts for a substantial majority of the non-Bahraini population and work-force. This was in sharp contrast to the situation in 1971, when Bahrain's expatriate population was predominantly Arab in nature.

This change in the composition of the non-national work-force in Bahrain can be directly associated with changing labour market structures and processes similar to those which have been observed in the capital-rich states. Given the limited size of Bahrain and its continuing plans for expansion and modernization the consequences of such labour force imbalances will be considerable.

The Aluminum plant served as one of the earliest examples of the efforts of rapid development on the labour force. The labour force greatly expanded because of the project but this labour was mostly expatriates from other cultures who used the opportunity to establish themselves on the island permanently.

It was because of their experience with the labour force that constructed the Alba plant, and in particular because so many of the immigrants used the Alba contract as a means of establishing themselves permanently as part of the Bahraini community, that a different strategy was adopted for the construction of the dry dock.

The Bahraini dry dock represented the pioneering of the enclave, work camp approach to major projects in the Arabian peninsula. A South Korean company provided the entire work-force and expertise for this major contract. During construction the Koreans, who consisted of only single men (or married men employed on a bachelor basis), working twelve-hour shifts, were entirely self-sufficient in housing, which they built themselves as part of the contract. Food and even recreation was flown in from Korea. The host government was asked to provide a minimal amount of services - water and power- and virtually nothing in the way of more general services, such as housing, education or health. Moreover, the enclave approach meant that there was only minimal contact between Koreans and the local Bahrainis, and a minimal disruption of the domestic labour market. During the building of the Alba plant, the Bahraini labour market had suffered large distortions which lead to considerable social upheaval. However the work camp nature of the contract led to a virtual complete departure of the Koreans after completion of the dry dock.

This model had been adopted by almost all the Arab states for large projects of this nature. Although the work-camp model works well, it is limited to the large projects and does not constitute a long-term solution to employment and labour market problems. To that end the government has embarked on an ambitious plan for the Bahrainization of the work-force.

1.11.8 Bahrainization

The labour ministry's battle for Bahrainization of the work force dates back to the country's independence in 1971. But the initiative in the early 1980's was the most determined attack yet on foreign domination of the business sector.

The Ten Thousand Scheme was an ambitious plan for the 1980's. Its aim was to train 10,000 Bahraini nationals for promotion to key positions then held by expatriates. It was aimed at providing day-release training, free of charge, for 10,000 Bahrainis over the ten year period, in business, engineering and computer studies, including administration, accountancy and a range of management and clerical work, with the expressed purpose of replacing foreigners in all the better paid jobs (Ministry of Labour and Social Affairs, 1983).

Although the plan was a good one it proved to be more difficult to implement than anticipated. For one thing, although several companies have already been 'Bahrainized' as regards to capital ownership, their staff and management have remained intact - remaining mostly non-nationals, especially in upper management positions.

The Labour Ministry, recognising that a greater push was required, tried, in 1982, to impose Bahrainization by insisting that companies replace expatriates with Bahrainis when their contracts ended. However, even here, a measure freezing overseas recruitment specifically for the jobs for which Bahrainis were to be trained, was still "footnoted" with the provision that the companies could still employ expatriates if no suitable Bahrainis were available (Shaw, 1983).

There has been resistance to this policy due to a misplaced sense of Western cultural superiority. Also, many upper management positions were held by expatriates who had a vested interest in securing their own jobs along with bias against and the lack of confidence in, local abilities. There was also some resistance from Bahrainis trained through the program. In many cases Bahrainis refused the positions offered to them stating that these positions were unsuitable.

This illustrates the difficulty that the government faces in its attempts to Bahrainize the whole working force. Generally speaking, the difficulty is not at the upper levels (although local trained Bahrainis who could work in upper level industry jobs may not be willing to give up their less demanding government jobs) but in the lower levels where the majority of expatriates are now employed. These are jobs that Bahrainis do not feel are prestigious enough and therefore it is the lack of desire by Bahrainis to be employed in these positions, not the lack of training, that is the problem. An additional obstacle to motivating local Bahrainis to take up technical and vocational education is the fact that there is an ample availability of cheap skilled labour from other countries (e.g. Philippines, Sri Lanka, India). As a result, progress with the policy of Bahrainization through the "Train 10,000 Scheme" had been slow. Improvements in education and training will have little impact on the manpower shortage problem if Bahrainis are only interested in higher level administrative positions.

1.11.9 Summary on Bahrain

Although Bahrain is principally an oil producer, the supplies of oil are limited and Bahrain has had to diversify in order to secure a prosperous future. The demand on human resources to sustain the growing number of industries has been considerable, and there is great desire and urgency to train Bahrainis to respond to these opportunities.

Bahrain's future, therefore, depends on its ability to successfully develop its human resources. However, the major thrust of the human resource development, if it is to be successful, must be in the technical and vocational areas where the greatest demand is. "Unless the content and method of education is altered to provide an increased amount of industrial education, the shortages of skilled manpower will continue" (Massialas and Jarrar, 1991). However, traditionally, Bahrainis have not entered these areas, preferring the more popular educational choices of the arts and humanities which lead to careers in business and government.

The role of education in general and the success of technical and vocational education in particular, are critical to Bahrain's current and future modernization activities.

The following chapter reviews the role that higher education has played in development and discusses the problems that Bahrain must overcome in order to successfully meet the needs of the society.

Chapter 2

Literature Review

The literature review focuses upon the broad topic of theories of development and the role of higher education in the development process. Theories of modernization and development differ profoundly in their assessment of the role which education plays in the development process. The purpose of this section is to contrast these theories with particular reference to unemployment, overeducation, credentialism, and appropriateness of education as they apply to Bahrain.

2.1 Modernization Theory of Development

Interpreting the role of higher education in development and societal change requires a theory of development. Theories of development may be broadly classified into two groups: liberal and Marxist. In the liberal tradition, theories of modernization are among the most popular theories which relate to the process of social change in contemporary developing societies. Often referred to as theories of capitalist development, they support the spread of capitalist forms, such as a market economy and individual competition, as a way of increasing everyone's well-being.

In traditional societies, caste or tribal affiliations often imposed restrictions on the free flow of goods and labour. This inevitably interfered with efficient economic management and growth. Modernization typically involved the removal of those constraints which effect the industrial productive capacity of a nation.

To an important extent the concept of modernization is often linked to the desire that poor countries should progress towards styles of living and modes of production and organization of economic activities which are characteristic of the industrialized world (Avalos, 1989).

Operating an industrial economy requires a high degree of literacy and numeracy, as well as a large number of skilled, professional and managerial employees. Hence education and training are seen as important elements in the modernization process.

For example, in recent decades developing countries have embarked upon ambitious programs of industrialization. Development policies have focused on the creation of autonomous and dynamic industrial establishments in which education played a major role. Better trained and educated personnel are needed to supply the necessary high-level qualified manpower required to run such an economy, and to help socialize the people into the new capitalist culture.

Within this 'functional' paradigm, economists have developed an important body of theory and research known as the 'human capital theory' which suggests that it is the quality of the 'human resources' of a nation, as well as its capital and national resources, that ultimately determine the character and pace of its economic and social development. Education therefore is seen as an investment that will, by increasing human capital, knowledge or expertise, provide benefits to the individuals in the future, for example, in the form of increased earnings (Harbison, 1973; Harbison and Myers, 1974, Blaug, 1976; Psacharopoulos, 1985). It is also believed to be a more equitable system as each individual is free to choose how much training or education he or she wishes to acquire, and what labour markets they prefer to enter. Wage differentials are explained as reflecting the scarcity of supply of certain trained personnel and the different choices that individuals make about their occupational futures (Baker, 1975).

Drawing on the neoclassical theory of markets, wage differentials whether between high school and university graduates or between different occupations, are assumed to reflect productivity differentials. Therefore, studies can be undertaken which compare ‘rates of return’ to different types of education by contrasting the time profile of expected earnings and costs. In general, rates of return to most forms of education in developing countries have been found to be high relative to average rates of return to non-human capital investments (World Bank Educational Review, 1984; Psacharopoulos, 1981; Mingat and Tan, 1988).

Thus expenditure on education is viewed as an investment yielding positive rates of return to both the individual and society in general. To this end, many developing countries such as Bahrain have engaged in rapid expansion of their educational programs as a key to national development.

2.1.1 Role of Education In Modernization

Education is expected to play a major role in such modernization plans. The role of formal schooling as an allocator of social roles had already become well established in much of the world by the 1940s. The concept of success through schooling was part of the local culture wherever Europeans dominated the local populations. When countries became independent, schooling was expanded rapidly in an attempt to produce a literate, highly skilled population to replace the expatriates and to help overcome political differences.

In theoretical terms, this view of education corresponds to the functional paradigm of schooling. In this theory the expansion of schooling is viewed as an essentially rational adaptation of the needs of a modern society. Schooling performs two important functions. First, it acts as an efficient and rational way of sorting and selecting talented people to enable the most able to contribute effectively to the economy and thereby attain the highest status positions. Secondly, it teaches cognitive skills and norms essential for the performance of roles in a society that is increasingly dependent on knowledge for its economic health and well-being (Hurn,1985). In this way schools promote a meritocratic-technocratic society in which highly skilled, technical occupational roles are achieved rather than ascribed. The theory envisages that modern society is an expert society which requires more and more specific knowledge. Further, the functional paradigm portrays contemporary society as a democratic society, moving gradually towards the achievement of humane goals - towards social justice, a more fulfilling life for all its citizens and the acceptance of diversity. In a developing country context, western education is traditionally viewed as a method of bringing people out of their ignorance and under-development into a condition of enlightenment and civilization.

To this end most developing countries actively supported the 'human capital theory' and engaged in rapid expansion of education as a key to national development. That is, the more education that the population had, the more rapid the anticipated development would be. Thus, institution building in higher education became part and parcel of the "modernization" strategy of development.

The university was especially looked upon as a source of high level manpower, which would play a leadership role in this modernization process. This would partly be done by training local personnel to replace the expatriate staff who held most of the key positions in these sectors and secondly by spearheading an expansion of the underdeveloped sectors.

However, in reality the goals of modernization and the benefits for the population were not as forthcoming as anticipated. As to education, the majority of people in developing countries are still excluded from even obtaining a complete cycle of primary education (the amount necessary for functional literacy), while the rising numbers of unemployed secondary and university graduates challenged the belief in the ability of capitalism to provide everyone with work (Coombs, 1985).

La Belle (1986) states that although education was designed to contribute to industrial growth, it has typically fallen short of expectations in promoting the modern skills, attitudes and behaviours among the poor. Even when the industrial growth model appears successful, judged by macroeconomic indicators such as Gross National Product (G.N.P.), this is really not a true indicator of success. The reality of the situation is often one of local dependency, repression, inequality and poverty existing even when Gross National Product is increasing.

In taking a new look at an old crisis, Coombs (1985) states that the early warnings of a world crisis were not a false alarm. Instead, the education crisis has not only intensified by the growing maladjustments between educational systems and the rapidly changing world, but has acquired new dimensions in the 1980s. The most significant dimension being "there is now a crisis in education itself" (Coombs, 1985, p. 9).

The early premises then, that substantial expansion of educational opportunities would accelerate economic growth, raise standards of living (especially for the poor), generate widespread and equal employment opportunities, accommodate desires of ethnic groups, encouragement of "modern" attitudes - have all been shown to be, at best, exaggerated.

Until recently however, few politicians, statesmen, economists or educational planners inside or outside the Third World would dare publicly challenge the role of formal education. Nevertheless, this challenge is now gathering momentum. After almost three decades of rapidly expanding enrolments and hundreds of billions of dollars of educational expenditure, the plight of the average citizen of Asia, Africa and Latin America seems little improved. Absolute poverty is chronic and economic disparities between rich and poor widen with each year. Unemployment and underemployment have reached staggering proportions with the "educated" increasingly swelling the ranks of those without jobs. In many countries the debt crises and falling incomes in the 1980s wiped out the modest gains of previous decades.

Even in the developing countries which have a relatively high rate of economic growth there are rising numbers of educated unemployed and underemployed. For example, in Sri Lanka the rate of unemployed graduates (grade 10-12) was higher than 30%. This contrasts with 5% for those without schooling. In India the number of unemployed university graduates has tripled (Irzarry, 1980).

2.1.2 Education and Unemployment

"Perhaps the single most alarming consequence of faulty planning and industrialization policies in less developed countries is the problem of chronic unemployment" (Mehmet, 1978, p. 40). Not only is unemployment increasing at an alarming rate but the average level of education among the unemployed and underemployed is rising. According to Mehmet (1988) statistics indicated that open unemployment in urban centres alone has reached the two-digit levels in most developing countries. Blaug (1987) writes that in almost all capitalist countries unemployment for people under the age of twenty-one constitutes 40 and sometimes 50% of total unemployment.

The presence of such great numbers of educated unemployed has definitely challenged the assumptions of the human capital theory. Technical and vocational education in particular suffer the problem of mass unemployment (UNESCO, 1987). Many attempts to explain this phenomenon and to develop solutions to the problem exist both inside and outside the education sector.

But what is the responsibility of the educational authorities in the 'employment problem' of developing countries? Is it strictly an educational problem? Blaug (1987) states that education is at least in part responsible for the whole problem of open and disguised unemployment because the bulk of existing formal education in developing countries restricts children's initiative and thus stunts the entrepreneurial spirit or at any rate discourages them from taking up self-employment which might in turn create jobs for others. In other words, education might not create the overall surplus of labour but once it exists it does nothing to alleviate it and probably makes it worse. It is also widely held that education in developing countries helps to promote the flight from farming to urban centres and in this way tends to convert disguised rural underemployment into open urban unemployment. Education then may not cause unemployment but it certainly brings it to the surface. It also absorbs scarce funds that might have been devoted to the creation of jobs, etc.

The mass unemployment problem in developing countries is very complex but the prevailing liberal view, as expressed by Blaug (1973, 1987) and representing the thinking of organizations such as the World Bank and the International Labour Organization, as to its causes, is as follows:

1. High Rates of Population Growth - Advances in medical science and modern public health programs have lowered death rates; however, there have been no corresponding levelling in birth rates. Therefore population and labour force have grown rapidly.

2. Capital Accumulation - In developing countries it is difficult for the poor to save large portions of their incomes and the rich have a tendency to place their savings in real estate rather than to invest it in a productive capacity. Some would also argue that a pre-occupation of post-war planners with capital shortages only, to the neglect of any employment policy, has intensified the problem.

3. Factor Substitution - This is imperfect because modern technology is capital-intensive. Although developing countries industries generally involve more labour per unit of output than advanced industrialized countries, the ratio

of capital to labour is still too high to achieve full employment.

4. Institutional Obstacles - These obstacles to employment, including the discrimination in labour markets, elitist or irrelevant education systems, and restrictive wage and income policies will be examined more closely in the later part of this chapter.

2.2 The Dependency Theory of Development

Another way of explaining the shortcomings of development efforts and the problems of unemployment, overeducation and under-utilization is in terms of the dependency theory. This approach poses the need to visualize the structural interconnections between the demographic, institutional, social, economic and political factors that underlie these problems and the historical processes and transformations that have shaped them (Irzarry, 1980). The implication is that the advanced industrialized countries developed precisely because it was underdeveloping the Third World, while the Third World became underdeveloped in aiding the ascendancy of the advanced industrialized countries.

The failure of capitalist development, particularly in the periphery countries, to enable everyone to participate in economic growth especially in the face of increasing average schooling and resultant expectations creates many contradictions.

The dependency theory therefore provides an alternative to the theory of capitalist development and change that emerged in the late 1950s. It rejects the neoclassical explanations that the primary differences between the advanced industrialized and developing countries are those which are supply related differences in their current stage of development. This implies that if the developing countries pursue "rational" economic policies, they can develop to the same levels as the advanced industrialized countries (Rostow, 1960, Carnoy and Levin, 1976, Carnoy 1980).

Dependency theory rejects this view of development. It argues that historical time is not linear and that it is therefore impossible for societies today to duplicate the process of change which took place in the advanced industrialized countries in another historical period. Instead it points out that in the case of the developing countries, the social and economic framework within which these processes took place was conditioned by the structural relations of dependency of their economies on the economics of the advanced industrialized countries. Although there are variations in the form and degree of dependence among the developing countries their common denominator is their historical evolution as producers for export of one or a few unprocessed agricultural products (grains, fruits, etc.) and/or raw materials (ores, oil, etc.) to satisfy the consumption demand and the industrial production requirements of the advanced industrialized countries. In turn they have depended upon the advanced industrialized countries for the imports of manufacturing goods (clothing, cars, etc.) and the machinery, equipment, etc. and their corresponding technological know-how which are needed for their production activities. In time they also came to depend on the external sources of financial capital and credit.

2.2.1 The Role of Education in the Dependency Theory

Bowles and Gintis (1976) have presented a radically different model of the education system in a capitalist society, one derived from Neo-Marxist class analysis. They believe that the education system is designed, not to produce knowledge or skills but merely to reproduce the existing class structure. The function of higher education, therefore, is to perpetuate the elite power base by limiting access to higher education to the children of the elite and channelling the masses into the lower stream of education, usually technical and vocational education.

In this theory, education was expanded to prepare manpower for the administrative and clerical occupations that would derive from a dependency relationship. The emphasis on the classical and humanistic type of education therefore provided the necessary literacy skills such occupations demanded thus producing an elite in the image of the colonizer. Because the industrialization was so fragmented, dependent and restrictive, the large demand for highly skilled and educated manpower never materialized (Irzarry, 1980). The technology that was "transplanted" was of the kind that required little skilled personnel. The advanced industrialized countries' technology was capital intensive and labour saving.

Therefore although these countries embarked on ambitious plans for industrialization, the structural pattern of such dependent industrialization (with its relatively low levels of employment creation together with the displacement of labour from the land) had the effect of concentrating the employment distribution in the service sector of the economy.

In most developing countries over 60% of the total non-agriculture employment is in those areas (Coombs, 1985). This being the case, the corresponding skills which are in greatest demand in the job market are those skills related to the service sectors and not in the scientific and technical aspects of industrial production or agriculture, towards which the expanded educational sector has targeted its efforts and training.

The conflict theory argues that the employment structure conditions both the demand for secondary and higher education and the government's employment and educational policies. That is, because of the limited alternatives for employment and entrepreneurship in agriculture and traditional industries and because there are relatively few jobs generated by the modern dependent industrialization, to be upwardly mobile one must compete for relatively few well-paid jobs found mostly in the service sector and in government employment (Carnoy and Samoff, 1990).

In Bahrain's case the Government could afford to hire expatriates to do the jobs that Bahrainis preferred not to do, that is, either technical or low level labour jobs.

The education that was required by Bahraini's was almost exclusively in a general academic field which prepared them for employment in the civil service. In the beginning, these educated elite were easily absorbed into the government due to their limited numbers. People working in these positions were considered to have a privileged working environment.

2.2.2 Credentialism

The expansion of schooling as previously discussed, does not seem to have produced the benefits that the functional paradigm predicted. The conflict paradigm offers a different interpretation of schooling in its relationship to society. Like the functionalists it also sees schools and society closely linked but it stresses the links between the schools and the demands of the elites rather than the needs of the whole society. In this theory schooling only reinforces existing inequalities and produces attitudes that further the acceptance of the status quo.

Randall Collins (1979) one of the leading conflict theorists argues that we are becoming a society where largely unnecessary educational credentials determine access to desirable jobs. He rejects the argument that these credentials are necessary qualifications for effective performance on the job. These may be necessary for individuals to get the job but from the point of view of society as a whole the system is an irrational one. He goes on to explain that it is irrational because a large number of people are excluded from many occupations that they could perform only because they lack the necessary credentials. At the same time the people who are pursuing such credentials are spending large amounts of time in educational institutions acquiring the necessary "papers" that will help them obtain scarce but uncomplicated jobs (Dore, 1976; Dore and Oxenham, 1984; Blaug, 1987).

In this view, the curriculum content is more concerned with the inculcation of middle-class culture rather than teaching skills that might be useful in some later occupations. It is the demands of the elite rather than the needs of society as a whole that create changes in schooling. For example it has been the demand for compliance and control over the masses that has shaped the character of the schools (Collins, 1979; Blaug, 1987).

The consequences of the "paper chase" for status reaffirmation in a developing country context is devastating. As the middle-class compete for the limited number of jobs they increasingly attempt to obtain high levels of educational credentials to improve their chances of occupational mobility. The employers in turn, reinforce this process by using educational credentials as one of the main criteria of selection (Berg, 1970, 1981). Further, the government in response to political pressure from the middle-class further expands the more costly secondary and higher education at the expense of providing universal primary/secondary education. Therefore, education expanded beyond that which was required by the modernizing economy, especially in a dependent scenario.

The same structural factors associated with the concentration of employment in the service sector of the economy further accentuates overeducation by making scientific and technical manpower redundant (Irzarry, 1980).

The ironic situation that exists today in developing countries is that skill shortages exist alongside the educated unemployed. Also, at the same time in some countries, especially in the oil rich ones, large numbers of expatriates are being favoured over local job applicants. Partly as a result these qualified individuals seek jobs in the economically more developed countries.

The surplus of trained personnel is reflected in various forms. The number of graduates in scientific, applied science and technical engineering fields who are openly unemployed is high. There is also a mismatch between technically trained professionals in relation to their occupations. In Brazil approximately 52% of all engineers are holding jobs unrelated to their training (Coombs, 1985). Also, there are high immigration rates to developed countries, a phenomenon known as the "brain drain." If it was not for this brain drain, surpluses would be even greater and more obvious.

The question of being too highly specialized or trained is related back to the dependent pattern of industrialization. The "new" industries are involved in performing the final stages of production and are firms which are engaged in what is commonly referred to as "screwdriver" industries. These industries require very little technological expertise since the more advanced technologically-complicated work is kept for the advanced industrialized countries.

Therefore ironically, the applied scientist, engineer and other high-level technologists more than any other occupational group have fewer opportunities to employ their specific skills. So these technically trained professionals who were prepared as the "strategic human resource" for development, have become a work force who are either unemployed, under-utilized or forced to migrate to put their skills into productive use. The alternative is to work at home in administration or clerical occupations that their educational credentials will help them obtain.

In addressing the vast unemployment problem then, the implications from the radical analysis for employment policy are directly opposed to the orthodox or liberal theory on a number of points identified by Carnoy (1977):

1. The liberal theory proposes that unemployment of unskilled labour is the result of schooling and training deficiencies, whereas the radical model argues that unskilled unemployment is more likely the result of the nature of the jobs held by the unskilled (inherently unstable). Thus, increasing the education and training of those who work in this ‘secondary’ labour market will not increase the probability of employment of the unskilled.

2. The existence of a large pool of unemployed skilled labour is not a result of distortions in the free market

system, but a result of policies that are consistent with capitalist pressure to keep wages low.

3. Even if wages were lowered, full employment may not be achieved. This is because the technology that is imported is not labour intensive and because there is a constant source of conflict between labour and the system of capitalist production within the capitalistic system. This results in a preference for technology that employs fewer people. Thus, employment policy in this model focuses on the nature of labour markets rather than on the characteristics of workers in the market (Carnoy, 1979).

In summary then, problems of unemployment and migration and the role education has played and continues to play, depends upon how one views the functioning of the economy and its labour markets.

It follows then that the policy approaches to the problem of education also differ greatly.

The conflict theorists contend that the proposed 'solutions' will not appreciably alter the situation and that further educational spending can only exacerbate the problems of unemployment, poverty, inequality, rural stagnation and intellectual domination that now defines the very conditions of underdevelopment in much of the developing world. They recommend an alternative approach.

The alternative approach is an attempt to reform the overall educational system by modifying both the conditions of demand for and supply of educational opportunities and by reorienting curriculum in accordance with the real resource needs of a nation.

This view holds that the educational system largely reflects and reproduces rather than alters the economic and social structures of the societies. Therefore any program or set of policies designed to make education more relevant for development needs must modify the economic and social situation outside the educational system (effecting demand and supply of school places, etc.) as well as the internal effectiveness and equity of the education systems (appropriateness of curriculum, financing, selection, etc.).

The emphasis, therefore, does not lie in the restructuring of the educational system or even in the creation of new forms of education, but is the restructuring of the production system.

In the conflict paradigm, policies that emphasize only educational changes are viewed as being misdirected and detracting from the real cause of unemployment which resides in the nature of the capitalist production. Strategies for change, therefore, hinge on building political support among employed and unemployed workers. Employment strategies, therefore, would vary according to the individual segment of the labour force being addressed (Carnoy, 1980).

Such coordination of educational reform with economic planning for employment and redistribution of economic power however, is opposite to that what exists in most developing countries today. Policies would need to be developed to ensure that schools were increasingly becoming 'tied' to work. There are examples of this policy in both the advanced industrialized and developing world. For instance in Cuba the 'schools in the countryside' have become the principal feature of Cuban educational expansion since 1969 (Dunn, 1982). Here students are required, as part of their regular curriculum, to work on the land during the four-year schooling cycle. In Canada, the practice of working in industry while studying has gained respectability especially in the field of Business Administration.

The conflict theorists, however, sees this as only a beginning. They stress the need to reorganize the ways goods are produced. Particularly changing the control of decision-making in production and the priority placed on employment over profit. Such changes are not made easily in developing countries. These suggestions can only be implemented under certain political conditions and must be part of an overall strategy for changing control of how goods are produced and who receives the benefits of production. Such changes require the organization of a mass political base. At the present time however many developing countries are not prepared for such radical transformations. In the meantime there are still the pressing educational problems discussed above. The Marxist dependency theories have been particularly helpful in detailing the problems. Their shortcomings appear to be the lack of any plan for action or reform while existing social and economic conditions remain.

As a result of this, practitioners began to search for alternatives. The outcome was the development of a new approach, referred to as the peace paradigm. Among other things, this paradigm seeks to empower the masses by making them more fully aware of the causes of their underdevelopment and what possibilities exist for transforming their own living conditions. Freire was a leading proponent of this participatory developmental model.

2.3 Bahrain - A Combination of Approaches

On the whole, Bahrain follows the liberal tradition in that it supports the spread of capitalist forms and acknowledges the need for a large number of skilled, professional and managerial employees. Education and training are acknowledged as playing a major role in their ambitious plans of modernization. Bahrain therefore supports the human capital theory and attempts to relate educational output to planned educational needs.

However, Bahrain is an absolute monarchy. As such, it has through its various government policies, used education for the means of social reproduction in the support of the status quo. This is of particular importance to an absolute monarchy where contemporary society is not a democratic society. Although more true in the past, the links between the schools could be viewed as being directly related to the needs of the elite rather than the needs of the whole society.

2.4 Specific Weaknesses of Modernization Theories: Institutional Obstacles

The following section will discuss some of the specific weaknesses that have been identified within the liberal model and how they relate to Bahrain.

Whether one accepts the liberal model as inevitable, or simply wishes to work within it recognizing its weaknesses, but attempting to improve the existing conditions, the realty is that most developing countries, like Bahrain, are still working within the liberal tradition.

In this model as discussed earlier, the solution to unemployment ultimately is to increase the formation of physical capital and to invest in education. However, institutional obstacles have interfered with its application. Several institutional obstacles will now be explored.

1) Elitist Wage and Income Policies

In many developing countries the largest portion of government budgets are allotted to salaries and fringe benefits of government personnel. These pay scales are often in excess of wages in the smaller business units of the private sector. It is understandable then that a large demand for civil service jobs would exist. In the private sector as well, wages and incomes policies have tended to restrict the growth of the employment opportunities. For example, the setting of minimum rates at artificially high levels has resulted in the worsening of the urban-rural drift. As recent statistics indicate, average real family income in the traditional sectors is often two to three times lower than in the modern sector (Todaro, 1989). As long as the gap between urban and rural incomes remain high this exodus will continue, thus contributing to urban unemployment.

In Bahrain the government practice of guaranteeing all Bahrainis jobs in the public service, regardless of their formal qualifications, has lead to problems of over-staffing, low productivity, credentialism, and lack of incentive to pursue jobs or education outside this sector. This is particularly true in the technical areas where students must work longer and in more difficult subjects only to graduate and take up positions in the civil service that does not require them to have these specific skills. Even with higher wages in the private sectors graduates prefer the "comfortable" government jobs where expectations are lower. The effect of these pressures is presented in Chapter Three.

2) Non-Competitive Labour Markets

Another important cause of unemployment and underemployment is the widespread discrimination in the labour markets. A lack of equal opportunity for equally qualified job applicants is not unusual. Whether based on ethnic, tribal or status it is crucial who you know, not what you know. Family connections are often imperative to obtaining employment. In Bahrain, family and close friends of the monarchy occupy all the key positions in the governments.

There is also a second form of discrimination - a preference for expatriate over local job applicants. This was understandable in the past when there were acute manpower shortages in technical and skilled categories, but this is not longer always the case.

The practice of discrimination in favour of foreign personnel over local is also actively practiced by the multinational firms, especially at senior ranks. Here salaries are several times higher than even the top salaries paid to local employees. This point has often lead to resentment between foreign and local communities.

Bahrain has been aware of these imbalances and have made a national policy to correct them. This is particularly important for the field of education. At the Gulf Polytechnic in Bahrain, for example, it was discovered that at one point, no less than 36 different nationalities were represented at the Institute. The government now has ambitious plans of "Bahrainization" of all staff. This entails replacing expatriates with Bahrainis not only in the educational institutions but in all occupational fields throughout their society. They have acknowledged that this also requires placing the necessary emphasis on education and training that is essential to realizing this goal. This is witnessed by their concern that the education and training meet international standards, thus providing the new graduates with the skills and knowledge needed to replace the vast numbers of imported labour.

However, there has been criticism over Bahrainization. There are accusations from the Shite Bahrainis that the best jobs and educational opportunities go first to the Suni nationals and that discrimination within the process of Bahrainization is rampant. They have also interpreted the thrust towards vocational and technical education at the post-secondary level as a further form of discrimination. This is because Shite's pursue advanced education in greater numbers than Suni's and they interpret the expansion of advanced education in technical and vocational education, viewed by the Shite to be second-class, as a direct attempt by Suni's to limit their access to better jobs and positions by limiting their opportunities to attend universities. Other problems with Bahrainization will be discussed later in this paper.

3) Elitist and Irrelevant Education

Although many developing countries have experienced rapid growth of enrolment, the quality of education has deteriorated because in many cases education has expanded horizontally, in quantity, at the expense of quality and relevance.

This can be seen in the high priority given to university-level expansion to the detriment of other levels of education. Also, this expansion has often been uncoordinated with any employment opportunities, as the universities tend to emphasize the classics and humanistic type of education that do not necessarily meet the specific manpower requirements. Curriculum policies as well, contribute to oversuppling educated manpower by instilling in the students a preference for general rather than technical education.

In a country such as Bahrain, where technical and vocational skills are so much in demand by industry, the expansion of university education, as opposed to technical post-secondary education, should have been further examined. A more detailed discussion of what constitutes "relevant" education and the problems that educational planners have witnessed in the past, will be addressed later in this study.

2.4.1 Solutions to the Problem of Educated Unemployment

Some of the current proposals put forth as possible solutions to the problem of the educated under and unemployed are as follows:

1) Quantitative Controls

Quantitative controls appear to be the simplest way of dealing with educated unemployment. Restrict the expansion of education by imposing ceilings on the number of places that are provided at various stages in the process. Applications to each stage would be selected for example, by a system of nationally administered examinations. This is most effectively accomplished at the university and institutions of higher technical education where governments have more control over rationing places. This solution may create an additional problem however. It does result in fewer unemployed university graduates but it also creates more unemployed high school graduates. Since the costs of producing a university graduate greatly exceeds those for a high school graduate, frequently by a ratio of 8:0, (Coombs and Hallak, 1987) and a year of higher education costs a hundred times as much as a year of primary education (Blaug, 87), this policy releases resources that could be applied elsewhere in the creation of additional job opportunities.

In many countries the idea of enrolment ceilings in higher education is literally impossible. For instance, in the Philippines, there are only 23 state-operated colleges or universities out of some 2,000 institutions of higher education and 92% of the funds required to operate them are from private sources (Coombs, 1985). This obviously limits what governments can do.

A variation on this process is practiced by Bahrain in an attempt to control the ratio between the numbers of trained middle and higher level personnel. At the Gulf Polytechnic both degrees and diplomas are granted. However, in an attempt to control the number of graduates from each program, a ratio of 4 to 1 in the registration of its engineering students is enforced. That is, for every degree student accepted into the degree program there must be four students accepted into the diploma stream. This is in direct response to the employment situation. Like most developing countries today Bahrain suffers from a scarcity of middle-level personnel. In engineering, the economy requires more technicians and technologists then engineers.

Although most Bahrainis aspire to become engineers when entering the Institution, places are limited and the majority are accepted to the diploma program only.

2) Shifting a Greater Percentage of Costs to Parents

This option considers raising fees, especially at the tertiary level, to cover the full costs of higher education. Thus reducing the private rate of return to such education which would in turn effect the private demand for place (Blaug, 1987). If this was accompanied by a fair scholarship program for the poorer students this system could be feasible. For instance, if all students had the opportunity to acquire a loan with the condition that repayment would come from future earnings from work in the country. Also if the repayment was conditional on the student's finding work, this might act as an incentive for governments to develop more employment opportunities with the knowledge that their investment would be recovered. If the scholarship route is followed, care must be exercised in devising a scheme for the selection process. It cannot be made solely on grounds of past educational performance - again this would be favouring well-to-do families due to the well known relationship between academic achievement and socio-economic status.

Problems can be anticipated with this solution. The poor may be less willing to borrow, especially against a repayment that is related to uncertain future earnings. Also, there is no guarantee that jobs will be available in the area of specialization of the students. Therefore a question that will also need to be of concern is who will be working in the low paying but necessary fields if this model was fully adopted?

Other schemes to shift more of the cost from the public to private sources such as employer contributions and student loans in place of scholarships or grants have been suggested as possible ways of limiting educational investment (Psacharopoulos and Woodhall, 1985).

In Bahrain the financing of education is not the problem that it is for many developing countries due to their more favourable financial situation. However, in relation to its neighbours, Bahrain has limited resources and therefore has instituted a student fee for studying at the Polytechnic. Although the cost is affordable, this differs from other Arab countries in the region where higher education tends to be free. In the future, as revenues from oil dwindled, more of these costs may have to be borne by non-government sources.

3. Educational and Manpower Planning

Educational planning was adapted in many countries in an attempt to better match the graduates of the different levels and sectors of the educational system with the needs and capacities of the labour market. Projections of manpower needs play an important role in educational planning. However, the relationship between education and employment continues to be beset by a variety of problems: the expansion of educational systems outruns the absorptive capacity of the labour market; educational development generates expectations on the part of students and families which a more slowly growing economy cannot fulfill; and there are considerable differences in matching of school-leavers with employment opportunities (Blaug, 1987; Todaro, 1989).

A new branch of economics, dealing specifically with education was developed about 20 years ago. The resulting research has shed additional light on the problems and has made more importantly, specific recommendations in addressing the educational unemployment crisis.

In brief, research findings have led economists to advise that future educational programs should consider : more investment in primary education, recognizing the overinvestment in higher education, and the general non-support for vocational schooling. Foster (1965) argued, for example, that vocational training provided within formal educational institutions at least at the primary and secondary levels, could never be an effective method of accelerating economic development. This research has also brought to the surface the inherent problems involved in educational planning. Because of the length of most educational cycles, manpower forecasts that attempt to be useful to educational planning are forced to look ahead at least five to ten years. It is not surprising to discover that completely accurate forecasting is impossible over such lengths of time. But what is disturbing is that virtually all long term manpower forecasts have turned out to be seriously wrong (Blaug & Ahamad, 1987). Decision-making under uncertainty therefore leads planners to different kinds of decisions or recommendations, that is, the uncertainty of the future argues in favour of teaching general rather than specific skills, of late rather than early specialization, of part-time rather than full-time education, of expenditure on the provision of information, and in general, of postponing all specific occupational training decisions as long as possible (Carnoy, 1980). In addition, economists have pointed out that educational planners must take into account the functioning of the labour market. It is the market they argue, and its demands that will inevitably indicate what value education is to individuals.

Labour market studies are rare in Bahrain, which meant that in the past educational planners were unable to utilize this important information. Later chapters will analyse the economic environment and the attempts at matching education to manpower needs.

4) Vocationalization of Curriculum

The premise here is that inappropriate curriculum will need to be replaced by practical training and/or actual work experience. Students under ideal circumstances, could earn some income or at the least, valuable experience while acquiring skills that can be directly applied in the economy upon leaving school. Again many problems must be overcome for this option to become successful.

First, career-oriented curriculum differs vastly from traditional curriculum and parents and students object to any tampering with the academic curriculum.

Second, the vocationalization of curriculum of schools in rural areas created even a greater differential between rural and urban schools. Having completed a rural curriculum, graduates may be less able to compete for jobs and opportunities in the urban areas. Also, access to higher education, especially higher technical education, requires academic preparation. Schools specializing in vocational education alone would not be preparing their graduates to compete at the same level as their counterparts from more traditional academic streams.

In a study conducted by Ryerson Polytechnic Institute (Phase II Report, 1984) an analysis of the secondary school system in Bahrain showed that there had been major changes undertaken in recent years to the structure of secondary school organization and programs and that the changes had a considerable effect on the post-secondary technical institute. The major changes occurred in the curriculum which had shifted away from a purely academic approach. The purpose of the change was to allow for more adequate preparation for the majority of students who would move directly into the job market.

However, this transformation in the school system had brought with it a number of problems that directly effected the post-secondary technical institute, Gulf Polytechnic. First, although the shift away from an educational system with a strictly academic basis to one oriented more directly to the job market appeared to have benefitted Gulf Polytechnic, it in fact, did not. This is because although the curriculum was now more oriented toward technical and vocational education, it was not directed to their study at a higher level, but rather, it was oriented towards those who planned to terminate their studies after secondary school. Those who wanted to go on in higher education but in a technical field, did not have the advanced preparation required by Gulf Polytechnic. The existing curriculum, therefore, either catered to those going on into pure academic study or exiting into the labour force.

Thirdly, vocationalizing the curriculum also puts an incredible strain on the financial budget. The cost of preparing new curriculum and retraining teachers for vocational subjects would be considerable. Bahrain relies heavily on expatriates to supply this function which, as discussed later, creates additional problems.

2.5 Why More Education?

Considering the increasing levels of unemployment and underemployment among the educated, the question arises as to why people still continue to desire or demand education. Quite simply, education is still a highly valuable commodity. In reality, it is those in society with more education of whatever kind, who will enjoy the higher than average earnings from employment. Education also contributes indirectly by improving levels of health and life expectancy and by reducing fertility (Psacharopoulos and Woodhall, 1985). It may take longer to find employment, jobs may not match training, and employment may be outside of the region or country in which one lives, but post-secondary education is still a valued investment.

This is especially evident in a developing country context where education continues to be regarded as something valuable and something to be financially rewarded (Blaug, 1987).

Reports in Bahrain confirmed that these premises are widely supported (Saif, 1987). For example, the policy of guaranteeing substantial jobs in the government for all those holding degrees, continues to reinforce the pursuit of credentials thus maintaining the high demand for education.

2.6 Educational Reform

The topic of educational reform has taken on more importance in recent years due to the worsening conditions of unemployment and migration. Education continues to be beset with difficulties and has met with surprisingly little success. This is true for socialist, mixed, as well as capitalist political states (Dore & Oxenham, 1984). One can assume then, that the difficulties do not lie solely in any one political system.

Criticism of education in general and higher education in particular, are not a new phenomenon. Yet reform in most developing countries has been slow, especially in the vocational or prevocational areas, where attempts at making higher education more relevant have met with disappointing results.

2.7 Summary

In the liberal tradition education and training are essential to the development and modernization of Third World countries. The theory argues that greater investment in human capital increases individual productivity and income, and concurrently lays the technical base for the type of labour force necessary for economic growth in a modern industrialized society. Thus educational spending is an investment in individuals and the society as a whole, yielding positive social and individual rates of return.

Bahrain has actively followed the liberal tradition and has also experienced some of the problems inherent with the human capital theory, such as high rates of educated underemployment and migration. Supporters say that these problems can be rectified. Solutions that have been put forward include quantitative controls, shifting costs to parents, educational and manpower planning and the vocationalization of curriculum, all areas that Bahrain had been attempting, in varying degrees, to influence.

In general, however, the solutions put forward more or less encouraged policies of the past to remain. That is, that expansion of formal education should continue, but modifications within education should be made so that the education system is better able to produce those skills that will be required in the future. In this way there will be improvement in both education and employment opportunities. For, despite these problems, the demand for more education is strong and education continues to be highly regarded and rewarded.

The following chapter describes education in Bahrain and the surrounding Gulf area. Specific reference will be made to higher technical and vocational education and the problems that had historically hindered its effectiveness.

CHAPTER 3

EDUCATION

3.1 Introduction

A large part of Bahrain's strategy for modernization depends upon increased growth and investment in 'human resource' development. As a means of achieving this goal, education has been greatly expanded. In particular, technical and vocational education have been advanced as a alternative to traditional higher education as it is seen to be a more appropriate and relevant education for the needs of development. However, technical and vocational education have had many problems that have historically hindered its effectiveness. This chapter describes Bahrain's educational system and the problems that they must face when developing educational strategies. Specific reference is made to the problems associated with curriculum change as a means of making education more appropriate and relevant to development needs.

3.2 Educational Development in Bahrain

Before the introduction of modern education in Bahrain, the only formal traditional education was Kuttab education. This was mainly religious in content and included teaching the Quran and the basic tenets of Islam to both boys and girls under the age of 10 years.

Modern western-style schools were opened by a group of missionaries in 1889. Most of the students were enroled to learn to read and write the English language. The schools also taught the Bible, Arabic grammar and geography, along with sewing and embroidery for girls (girls and boys were segregated). However, the missionaries educational services faced strong opposition from local religious leaders who preached against their work. Primarily they were opposed to the fact that the schools actively attempted to convert these peoples to Christianity.

Bahrain was the first Gulf State to introduce a modern system of education which by the 1930's was well established. The modern schools placed equal emphasis on non-religious subjects like the Arabic language, arithmetic, basic geography and history. By the end of 1941 there were eight boys' schools and four girls' schools with a total enrolment of 1,144 and 667 respectively (Rumaihi, 1976). The discovery of oil in the 1930's was the start of a new era in education, for with the new revenues, the demand for education could now be satisfied. The government utilized the oil funds not only to refurbish and expand old school buildings, erect new ones and recruit greater numbers of qualified teachers from abroad, but also to make education free for everyone at all levels of society. Students were also provided with free medical care, free transportation to and from school and with board and lodging if that was necessary. Financial support was also available to needy students by way of social assistance.

The availability of these facilities helped to promote a favourable attitude among the general public towards modern education and encouraged parents to send their children to school. This was the case even for girls, who traditionally have been discouraged from attending school. In 1986, 85,867 children were receiving education in 139 government-run schools (The Middle East and North Africa, 1992).

3.2.1 Bahrain's Educational System

The educational system that is currently adopted in the whole of the Gulf area is in many regards an extension of that which was developed in the colonial era when education was geared primarily towards the production of government bureaucrats. The traditional emphasis in the Arab world has been on the verbal aptitude and the literacy aspects of education, which reflect the respect for the written word (Kubursi, 1981). Thus academic programs were considered to be the only appropriate ones. The following section describes the educational system in Bahrain which is comprised of primary, intermediate, secondary, and higher education.

3.2.2 Primary Education

Primary education consists of a six-year cycle for children ages 6-12. In 1985-1986, there were 50,936 students (25,756 male; 25,180 females), 59.3 % percent of the total student population, attending primary school (The Middle East and North Africa, 1992).

It is surprising to find that, even given the availability of such educational resources, that so many boys and girls were not enroled in primary schools (al-Misrad, 1985). This situation is quite unsatisfactory considering that Bahrain urgently needs to increase its utilization of the national manpower reserves and achieve maximum productivity from their educational programs. Recent legislation which has made education compulsory for all children through to the eighth grade will hopefully aid in overcoming this problem.

3.2.3 Intermediate Education

Intermediate level education is a three-year cycle in which 19,838 children (10,529 males; 9,309 females) were enroled in 1985-1986. Intermediate level students represent 23.1 percent of the total student population (The Middle East and North Africa, 1992). At the end of the third year, students received a preparatory certificate called the l'dadiah. They are then eligible to enter secondary school.

3.2.4 Secondary Education

Secondary education was almost non-existent until the early 1960s, but from this humble beginning it has expanded during the last two decades to number 15,093 students in 1985/1986, 17.6 % of those aged fifteen to seventeen were enroled at secondary schools (The Middle East and North Africa, 1992).

The secondary stage is also a three-year cycle and is modeled after the Egyptian system. Students must have passed the l'dadiah and be no older than 18 to begin secondary school. General secondary curriculum consists of religious education, Arabic language and literature, English language and translation, history, geography, society, philosophy and psychology, economics, social culture, arithmetic, physics, chemistry, natural history, vocational education, and physical education. The last two years are divided into scientific and literacy tracts, and students emphasize different subjects accordingly. At the end of the third year, a final thanawiya exam is administered. Those who pass the examination are awarded the Tawijihi, which qualifies them for post-secondary education (Schmida, 1983).

In addition to general secondary schools, students may also enter commercial, vocational/industrial, health services or religious studies schools. Commercial secondary schools train students for clerical jobs, and in addition to studying general secondary subjects, students receive training in bookkeeping, mathematics, economics, business and typing. Several vocational and industrial schools offer a general secondary curriculum as well as labour law, industrial and engineering drawing, applied mechanics, basic engineering and costing, practical workshop and technology. Most courses follow the guidelines for British City and Guilds program and almost half the curriculum is in English. Graduates of secondary vocational and industrial schools are automatically admitted to Gulf Polytechnic.

This rapid development of secondary education directly parallels Bahrain's economic growth. Initially, secondary education was considered to be technical or professional training for clerical, commercial and teaching jobs. However, because of the rapid economic growth and changes in social attitudes and aspirations of the people during the early 1970s, secondary education began to take on the role of preparing students for further education. In the early days of modern education there was little distinction made between general academic and technical secondary education. However, today there are various kinds of technical education available at the secondary level, but both enrolment in and popularity of secondary technical education are rapidly declining. Figures show that from the total enrolment in secondary education, 80% were in the general academic courses and 19% in technical courses (al-Misrad, 1985). The problems experienced in technical and vocational education are addressed in more detail later in this chapter.

Prior to 1954 secondary education was a four-year unified course. Later however, it became divided into three sections: general academic, commercial and teacher training. The aim of the modern secondary education is two-fold. First, to give a general education enabling the students to become useful members of society, and secondly, to equip them with sufficient knowledge to continue on to the university level. General academic secondary education is a three year course divided into two sectors, science and arts. The student is entirely responsible for making the decision as to which section to join. The Ministry of Education actively encourages students to take up science subjects. In Qatar, for example, monthly allowances are offered to students who join the science section of secondary schools. However, the results have been disappointing.

In general, secondary education is viewed as the weak link between primary and higher education. Although emphasis has been placed on primary and university-level education, secondary education, which not only plays an important and significant role in raising the quality of literacy of any society, but is also crucial to determining the quality and standard of university and higher technical education, has been neglected (RIDC, Phase II Report, 1984).

There is, then, an urgent need for such measures as the modernization of curriculum and improvements in teaching methods. One of the main defects that has been identified is the lack of objectives and scope. For example, its curriculum has neither been related to the everyday problems and needs of students nor has it been designed to promote the development of attitudes among students necessary for the achievement of national and social goals. The present curriculum places emphasis on book-learning or rote memory and is largely dominated by a stifling examination system. This problem is faced by most developing countries where teaching methods often do not involve interesting examples, experiments or any first-hand experience. The lecture is the primary instructional method of delivery while students sit taking copious notes. The majority of students are said to find their education dull and uninteresting. It has also been criticised for alienating the students from their cultural environment.

The effects of these problems on higher technical and vocational education will be discussed later since it has tremendous implications for the success of higher technical education.

3.2.5 Higher Education

There are five higher education establishments: the University College of Arts, Sciences and Education, the Gulf Polytechnic, the College of Health Sciences, the Hotel and Catering Training Centre, and the Arabian Gulf University (in development).

a) University Education

The expansion of secondary school education in Bahrain created two immediate problems: a shortage of national teachers and the demand for higher education. In order to ease the problem of the acute shortage of national teachers and to overcome the difficulty in recruiting qualified teachers from the Arab states, advanced teacher-training colleges were established. From the beginning, the intention was that these institutions would form the nuclei of future universities, as the demand for a university education was great. One of the main factors responsible for this was the fact that the nationals returning home with degrees from overseas universities were offered jobs with incredibly high status. The prestige attached to university degrees created strong aspirations among young students and their families to obtain a university education. At that time, the government authorities were trying hard to attract more nationals to join the advanced colleges of technical education. Yet the disparity in salaries between a university degree and a diploma from a technical college and the importance attached to a university degree were so great that no more than a handful of students were attracted to the technical colleges. One would argue, then, that efforts to expand technical education are unlikely to succeed until wage and status gaps are narrowed.

Efforts by Bahrain students to secure a university education abroad can be traced back to 1913. At this time such students paid for their university education mostly from private means and attended institutions in Egypt or other Arab countries. The government tended on the whole, not to be enthusiastic in its support of these educational efforts by the students, especially since those who studied outside the Arabic countries often returned home strongly critical of the authorities and the ruling family. For that reason the number of government scholarships for higher education abroad were limited and this imposed severe restrictions on access to higher education.

This did not however, act to dampen the demand for such education, which was rapidly increasing, owing, as mentioned before, to the high status attached to the university degree. Once the degree was acquired it acted as an immediate passport to prestigious positions in both the civil service and the private sector. Not only were returning nationals given prestigious jobs, but they were often also in receipt of loans for building a house, buying a car, etc. The prestige attached to a university degree is a common feature of Arab society.

Despite internal opposition from the government, a variety of factors resulted in the expansion of the number of university scholarships offered to students to study abroad as well as the development of a national university. These factors were as follows: a) a rise in the total number of secondary school graduates b) an enthusiasm for university education and a lack of interest in technical education c) an unexpected increase in the number of female students d) an official policy which promoted university education e) economic changes resulting from the 1973 oil price increase (Saif, 1987).

As a result there was a marked increase in the numbers of students studying abroad to attend universities. The data on course selection preferences among these students indicated that female Bahraini students took more courses in general arts, music, fine arts, home economics and physical education. For example, of a total of 3,244 students, 39.4% were enroled in general arts, the next largest group being 17.9% in commerce, economics and business studies. Of a total 5,034 male Bahraini students studying abroad, the largest percentage, 29.9%, were enroled in engineering, followed by 21.7% in commerce, economics and business studies. The general arts category was represented next with 19.9% of the students (Saif, 1987).

Due to the great demand for higher education and the fact that the cost of studying abroad was very high (even the government could not afford to send large numbers abroad), the government approached the United Nations Development Programme Agency for their technical advice and financial assistance in order to establish a university college. In 1978 an agreement was signed between the government of Bahrain and the United Nations Agency to establish the University College of Bahrain, which opened in 1978/79 (Shirawi, 1987). The college is co-educational and tuition fees are charged (unlike neighbouring countries). The University offers programs leading to degrees of Bachelor of Arts and Bachelor of Science and provides courses in the field of education. Post-graduate programs of study are also offered, leading to a M.Ed. degree, with specializations in biology, chemistry or physics.

In addition to the University College in Bahrain, a bill for the establishment of an Arab Gulf University in Bahrain was passed in 1980. The seven Arab States - Iraq, Saudi Arabia, Qatar, Oman, U.A.E., and Bahrain were all signatories to the agreement. The main reason for the establishment of this institution was the desire of the member states to cultivate a greater spirit of cooperation in different technical and cultural fields and it now stands as a symbol of cooperation in the field of higher education. The first three facilities opened were medicine, science and education.

However, despite the considerable efforts which have been put into the development of university education at home, education abroad is still the more popular choice of students, particularly for males. Several reasons are suggested to explain this trend. First, the standard of the education and training at the national universities in general and in scientific and technological subjects in particular are not of the same calibre as western universities. This might explain why large numbers of male students studying abroad choose engineering as opposed to the popular general academic arts. Secondary, in terms of job prospects, degrees from foreign universities are given higher value. Finally, the experience of different life styles abroad is another attractive feature. Home universities, as a rule, have little social life, etc., and function more or less like a secondary school. That is, students attend lectures and then return home. However, for the female students, who are not encouraged to go abroad, the home universities are a very popular second choice.

b) Technical and Vocational Education

There were two major technical and vocational institutions in Bahrain. One was the College of Health Sciences which was founded in 1976 as a public institution by the Ministry of Health. The college was the first institution to bring nurses and technicians into a unified training program. They also developed a relationship with the American University of Beirut's School of Nursing, which resulted in the upgrading of the college's faculty. The college offers programs for non-degree students as well as an associate degree program.

The second major technical and vocational institution is the Gulf Polytechnic (G.P.). Formally called the Gulf

Technical College, it was established in 1968 and is the oldest post-secondary educational institute on the island. The institute was looked upon to provide leadership in the area of technical and vocational education. G.P. has undergone considerable change and has achieved modest success as the leading technical and vocational institute in the Gulf area. One of the major changes that occurred at the institute was the re-structuring of the largest program area in an effort to make the curriculum more relevant and appropriate to the needs of the society. A description of the institute and the events that led to the development of a new curriculum, follow in the next chapter. Before this is attempted, however, an analysis of the general problems facing education and how they may impact upon the success of curriculum changes at G.P., will be described.

3.3 General Problems of Education in the Middle East

Recent expansion of education in the Gulf region, fueled by oil revenues, has been exponential. However, desired results from these developments have been disappointing and educational planners throughout the region have come under increasing pressure to "devise educational strategies which will maximally utilize the human resource base indigenous to each state and which tailor the educational systems to meet the specific and identified development needs of the state" (Garrett & Farghaly, 1987) i.e., education capable of producing high levels of skill and technical expertise.

Broadly speaking the problems of education in the Arab states are very similar to that of developing countries in the rest of the world. These problems, as outlined by Massialas & Jarrar (1991), are as follows:

1. the provision of schooling does not meet the demand, and falls even further short of meeting the target of universal primary enrolment. The same is true at higher and secondary levels.

2. the provision of education for adults is even more inadequate and non-formal methods of delivery are insufficiently used.

3. access is uneven and inequitable. Rural people and females are particularly disadvantaged.

4. vocational training does not meet manpower needs. There is a particular shortage of middle-level trained technical manpower.

5. there has been a dramatic expansion of the number of school places, but teacher supply has fallen behind, and overcrowding is common.

6. teachers are often undertrained and - in the poorer states - underpaid. Hence morale and the quality of classroom interactions are low.

7. teaching methods do not favour independent initiative and critical thinking. Systems are dominated by qualificationism - the stress placed on obtaining certificates that have little relevance to life and work experience, and which are often academically inflated.

8. curricula are based on out-of-date Western and Egyptian models; textbooks and other teaching aids are often in short supply, of poor quality and irrelevant content.

9. local innovative efforts to combat these weaknesses are also inadequate - there is still a marked (though decreasing) tendency to rely on cultural borrowing from the West to find solutions to these problems, although they are often inappropriate.

10. available resources are not efficiently used. Wastage through drop-out, repetition and absenteeism is high, and buildings and equipment are allowed to lie idle for long periods of time.

11. administrative procedures are highly inefficient. There is insufficient delegation of authority and, as a result, a great deal of time of academic and administrative personnel is wasted on routine chores which take far longer than necessary. Data and information gathering is poor, as is coordination between different administrative units. Nepotism is rife, and constitutes a major obstacle to improved efficiency.

12. Lack of manpower studies inhibit the planning of curriculum and enrolment projections that are relevant to future job opportunities.

The Gulf in general and Bahrain more specifically, have been attempting to address these problems. The Arab ministers of education, meeting in Abu Dhabi in 1977, declared as follows:

"The Arab countries are not merely taking steps to improve the existing systems; they are seeking to renew its form and content, methods and instruments. Some countries have achieved more than others, but all are motivated by a desire for change that augurs well for the introduction of new education systems that are more appropriate and more effective" (Abdelhad, 1980). However, despite all these measures, it cannot be said that the attempt to improve the quality of education has been successful in most Arab countries. There is still a long way to go, in spite of all the efforts by the various governments in the Gulf area, the ratio of vocational to general (academic) enrolment is not likely to change much by the year 2000 (el-Sanabary, 1992). Why is it that although there is an almost universal demand for technical skills in the work place that there is no complimentary expansion of enrolment trends in technical and vocational schools?

Bahrain, perhaps because of its longer tradition of modern education, has been more aware of the problems and limitations of its education system. In the immediate post independence years, the persistent question asked by the Government of Bahrain was how could education better contribute to economic development. This was reflected in Bahrain's first annual report submitted to the Conference of Arab Ministers of Education in December 1972. In this first statement, Bahrain declared that their educational policy involved the twin goals of combating illiteracy, and the improvement in the quality of education, in order to aid the country in its development programs. To achieve these goals, one of five important steps was "diversification of the curriculum, especially at the high-school level, to create a system of vocational training, which would be able to meet the country's manpower needs in economic and social fields" (Nakhleh, 1976, pg.15). Although the desire for relevant, vocational training was a key part of the first and subsequent educational policy statements, results have fallen short of expectations.

The question as to why efforts have met with disappointing results is of great importance. It is necessary to fully understand the barriers to technical and vocational education that has been experienced in the past so that the present developments do not perpetuate them. Even given the financial advantages that Bahrain enjoys "the problems of education in the Middle East cannot be solved by throwing money and sophisticated gadgets at them" (Garrett and Farghaly, 1987).

3.3.1 Technical and Vocational Education

"One of the thorniest educational issue in the Arab world in general concerns vocational and technical education, its potentialities and problems." (El-Sanabary, 1992, p. 34).

Technical education programs have undergone considerable modification in the Gulf area, although even today, none of these programs seems to have gained much popularity.

A review of some of the current problems facing technical and vocational education in the Gulf region follows. Any success at making education more relevant to the needs of a country must invariably take these factors into consideration.

3.3.2 General Problems of Technical and Vocational Education in the Middle East

The major problems of higher and technical education can be summarized as falling under the following areas: a) preference for university education over technical and vocational education, b) societal attitudes, c) lack of financial incentives, d) lack of trained teachers in the technical and vocational areas and e) relevancy of the existing curriculum.

a) Preference for University Education over Technical and Vocational Education.

Higher education has been expanding in the Gulf region but more often than not it has been in the area of traditional university education.

In recent years, however, this direction has been criticized - "although expanding education is commendable, one wonders if, in this sparsely populated country (Saudi Arabia), there is a need to build the world's largest university campus...One questions such an effort at billions of dollars cost when the government has failed to motivate enough Saudis to enrol in the several vocational training centres, most of which stand empty and hard pressed for recruits." (Ibrahim 1982, p. 121).

Although all government educational plans state the importance of technical education and their commitment to it as a priority, plans for a home university are well underway.

Amin (1974) takes an expansive approach to the paradox of growth and development in the region, he writes that accepting a class bias against manual labour, Arab governments have allowed general secondary education to outgrow technical and vocational training. But on facing an increasing number of students who, having finished their secondary education, demanded places in the university, the government again yielded to the pressure by expanding university education, particularily the less costly facilities of arts and humanities, out of all proportion with the employment opportunities for university graduates. Faced with another political problem resulting from unemployment of university graduates, Arab governments have again yielded to the pressure by overburdening the state budget with the cost of supporting university graduates irrespective of their actual contribution to production. Meanwhile illiteracy rates were allowed to remain surprisingly high. If this trend continues, how can vocational education possibly succeed?

In a study of both economic growth and development in the Arab World between 1930-1980, Sayigh (1982) wrote an essay on "Education and Training" in which he identified four "main misgivings" about the region's educational performance. Two of these concerns focussed on technical and vocational training. The criticisms included: the exceptionally low ratio of students engaged in vocational training compared to general education, and the overall quality of both technical and general education.

Therefore, while sustained economic development in the Arab Gulf region is rapidly coming to depend on a trained and skilled manpower base and while the Gulf nations continue to spend relatively large portions of their gross national product on education, nationals in each state are falling further and further behind in applied high technology. Estimates on enrolment in the year 2000 indicate that despite all the efforts and plans, 85% of students will be enroled in general academic education at the secondary level (Massialas & Jarrar, 1991). Further they report that the actual growth in percentages for enrolment figures at vocational and technical schools between 1975 and 2000 will not exceed 1.1 percent. These are alarming statistics given the need for individuals with this knowledge and training.

The problem of preference for general over technical education are many and varied, and are often grounded in a historical tradition (and more recently economic). Any serious attempts at vocationalizing education must deal directly with the problem of preference, both by students and their parents, for general academic education.

b) Societal Attitudes

Traditionally Arabs have reacted negatively to vocational and technical education as they conceived of such education as "parallel to the bazaar workshop, fit only for the children of the poor - a concept that had been inherited from the Turkish (Ottoman) times" (Massialas & Jarrar, 1983). In the 1950s only 1.5% of the students enroled in the second level of education attended vocational and technical schools. The majority of these students could not get through the academic programs, so they joined vocational and technical schools after dropping out of academic secondary education programs. Many of them, however, tried to study independently and sit for the high school exams so that they would have the chance of joining a university or institute of higher education, which is considered as the pinnacle of the educational system. The root of the problem appears to be the fact that the Arab education at large is not geared for programs that do not have academic respectability. Interestingly enough, student polls indicated that the negative attitudes towards technical and vocational education showed no significant differences between the respondents who came from the high or the low socio-economic classes. Both groups of students saw the importance of such occupations in terms of economic development, yet individually did not want to participate in them (Massialas and Jarrar, 1991).

As was stated earlier, Arab education, with few expectations, is very traditional, examination-bound, and targeted towards higher education. A university degree is seen as "the jewel of the crown and the centrepiece of achievement in a student's educational career" (Nakhleh, 1976).

Among the other factors that influence the choices of Arab students away from vocational and technical training is the low esteem attached to this type of training, which was seen as leading to manual employment. Arabs, not unlike people the world over, prefer white-collar jobs and occupations. The tendency of Bahrainis to avoid technical or manual occupations must be revered if optimum national dependence and development are to be realised.

c) Lack of Financial Incentives

A 1980 World Bank research project on "Manpower and International Labour Immigration in the Middle East and North Africa" presents another factor that plays a major role in the lives of many people, namely, the financial returns accruing to an individual. This aspect is especially clear in the capital-rich Arab states whose nationals, according to the study, opt for secondary courses that lead to a university education. This choice may not be misguided from an individual economic standpoint. Indeed, they are acting as "economically rational maximizers" of their lifetime income for the simple reason that most governments of oil-rich states offer priority employment opportunities to university graduates. These graduates enjoy better conditions and higher wages than are normally available in the private sector. The financial parity of technical education versus general education would encourage technical education as a more viable alternative.

d) Lack of Trained Teachers

Research has shown that student performance in developing countries is largely determined by the quality of school inputs and not by external socio-economic factors (Psacharopoulos and Woodhall, 1985). This means that it is possible to improve educational efficiency by such measures as improving teacher quality.

Among the most immediate restricting factors to the improvement and expansion of vocational and technical training is the lack of qualified teachers and instructors. Even with an increase in the number of graduates from teacher training institutes for vocational and technical training, many will be attracted to industry and the private sector where rewards are far more attractive.

e) Relevancy of Curriculum

Problems and criticism of education in general and its curriculum in particular, especially in a developing country context, have been documented and debated since educational policies in these countries began to be formulated. Foster (1965) notes "that criticism of curriculum and attempts to change it were reflected in every government appointed commission writing on education." Why then has this problem continued to persist, especially when one considers the fact that some of the current debates and criticisms have continued to read like those of the 1800s?

Bahrain, in it's efforts to encourage and develop vocational and technical education, is facing problems that foiled many other efforts. To be successful, they must avoid repeating many of the practices of the past.

The whole debate of "irrelevant" and "relevant" curriculum and the ensuing problems of curriculum change revolve around the analysis and understanding of other more far reaching questions which lie outside of education. In fact, the curriculum debate has suffered greatly because on the surface it appears to be a simple "educational" problem.

By analyzing the problems in the past, what becomes obvious is the fact that reforms will continue to be unsuccessful as long as the problem continues to be misinterpreted or not clearly defined.

Readings from the 1960s, 1970s and 1980s capture the essence of the debate pertaining to the development of the curriculum from the somewhat simplistic but characteristic argument presented by Thomas Balogh in 1964, to the writings of Foster who widened the debate during the 1970s, ending with a more recent 1987 discussion by Bacchus that clearly indicated the complex and multidimensional approach that is now called for in the interpretation of present day curriculum programs.

3.3.3 The Problem of "Irrelevant" Curriculum

Bacchus's (1980) discussion of Guyana serves as a useful and interesting example as it illustrates that the lack of success experienced by Guyanese educational planners in trying to respond to the persistent recommendations for "appropriate" curriculum was caused by a lack of understanding of the overall problem. This as we shall see was not an isolated case, but one that continues to be repeated by many countries.

In this example, the curriculum "problem" that was identified differed according to who was perceiving the situation and when. For example, the elite/technocratic view of the role of education changed through history. In the pre-emancipation period, education for the slaves was seen as a potential threat to the dominant group, i.e. the planter class. It was felt that through education the slaves might question the inequality of their existence vis-a-vis the plantation owners and this could have had dangerous consequences. However, after emancipation the elites were quick to see the value of providing an education. Now, it was necessary to inculcate the values of the colonizer to further legitimate their presence and ensure the emergence of a peaceful and obedient working class. Therefore, the role of education was to socialize the masses into accepting these subservient and conformist roles. After independence, education's role again changed with the further demands of the elite. Education was then called upon to train the masses for jobs in the manual sector and therefore the emphasis was on making the curriculum more functional to the economic system. It was from this position that the elite identified the problem of irrelevant curriculum. The curriculum was viewed as being far too academic and unrelated to the life experiences of the working class. Because of this it was criticized for being dysfunctional, as it bred dissatisfaction and discontent with agriculture and manual kinds of labour.

The solution, then, appeared to be relatively simple. What was required was the incorporation of vocational and practical subjects into the curriculum. This would be accomplished by replacing the "academic" subjects with more practical courses and the establishment of such facilities as school gardens, craft training centre, etc. In this way it would be possible to instill a pride among the masses for manual work in the traditional sector, something that the existing "irrelevant" education did not foster. The results of such attempts speak to the complexity of the problem. As previously stated, although every official recommendation reflected the necessity of such changes, very little curriculum change occurred. What changes did occur were more likely the product of other influences rather than those of administrative directives or wishes of the elites.

The problem lay in the fact that the working class had a different view on the role of education and this role also changed with the passage of time. Although education played only a minor role in pre-emancipation period, the lower class after emancipation quickly became aware of the advantages that education could yield, especially since more educated locals were being hired for the elite "white collar" jobs. Education was now seen as an instrument for their upward mobility and key to escaping subsistence agriculture. In this light the addition of practical or agricultural curriculum was viewed extremely negatively. After independence, the preference for academic curriculum grew even stronger. This was understandable, given the fact that people continued to be rewarded with jobs and status because of their educational attainment. Therefore, the lower classes continued to equate upward mobility with education.

For the working class then, the problem was not the "academic" curriculum, but the threat of practical subjects replacing and watering down the existing academic curriculum. The results of such attempts to vocationalize the curriculum in this scenario were predictable. The working class showed disdain for any attempt at the inclusion of practical courses into the curriculum. This was seen as taking away and interfering with the "serious subjects", subjects that would lead to improvement of credentials and life chances. In short, students did not go to school, nor did their parents send them to school, to learn how to labour and farm. They desired the more academic subjects that could enable them to better compete for the limited but high-paying jobs, away from the farm and factory.

Thomas Balogh (1964), details the problems of education in Africa in the 1960s. Balogh's view of the role of education in developing countries was in the provision of balanced programs of general material and cultural development. The major problem that he identified was an unbalanced curriculum that was far too academic, as it did not reflect the reality of the country which employed up to 80-90% of its workforce in agriculture. He was also highly critical of the policy to improve education by simply increasing the number of schools without giving any attention to a review of the curriculum. Not only did he find the curriculum irrelevant, but it was costly, with most of the expense being paid by foreign aid. In addition, these schools were modeled after the schools in the metropole. Balogh, therefore, argued that the schools hindered rather than helped the social and economic progress of a country.

His solution to this problem was to change the content of the education so that it would better relate to the physical and economic needs of the country. This would be accomplished through a "rural renaissance" that would be lead by elementary schools. All curriculum would give priority to general education and training for rural advance, as well as the provision of technical knowledge. To support this "renaissance", extension workers and cooperatives would be developed, technical cadres would be created to spearhead the rural educational changes and universities would be called upon to adapt their research to more practical problems. The costs would also be kept to a minimum with school gardens, cooperatives, etc. making the education self-supporting.

The result of such curriculum changes would, Balogh suggested, not only be the rural renaissance but the actual changing of attitudes and values as prestige and status would be bestowed upon the agricultural worker. The extension workers and teaching cadres would also acquire self-discipline and self-sacrifice through the program.

Balogh's article is important because of its simplicity of argument, lack of historical reference and lack of analysis as to why such a system existed in the first place. It crystallized the viewpoint that had been predominant up until that time. However, through Balogh's narrow perception of the problem and the unrealistic solution, other writers were sparked to take up the debate and expose the many problems associated with such an analysis. In short, the problem was now seen as a larger, more all-encompassing one. This is reflected in the writings that follow, where much of the discussion was focussed on why the "problem" has persisted so long and why attempts to change the past practices had met with such failure.

To this end, Philip Foster wrote a scathing critique of Balogh's position entitled "The Vocational School Fallacy" (Foster, 1965). Foster left behind, for all time, the simplistic analysis of this old problem. He did this by bringing the debate outside of the school arena where it had always been. His major disagreement with Balogh was in the strategy and in the degree to which he placed reliance on the formal educational institutions in effecting the change. He also disagreed with the view that vocational and general education should be seen as substitutes for each other, arguing that they are essentially complementary. In addition, Foster challenged Balogh's views that: 1) technical and agricultural education should be offered in the schools at any level, 2) academic systems create attitudes hostile to the practice of rural agriculture and 3) whether a fully integrated system of technical and vocational education provides a any solution.

Foster's discussion gives us a more in-depth analysis of the issue because it asked the question "why" there was so much demand for the provision of "inappropriate" academic-type education in the first place. His conclusion that it springs from a remarkably realistic appraisal of occupational opportunities, opens the door into the important and essential debate that economic considerations are closely tied to that of educational ones, "the strength of academic education has lain precisely in the fact that it is predominantly a vocational education providing access to those occupations with the most prestige and high pay" (Foster, 1965, pg.145). In other words, educational changes and adaptations can no longer be made in isolation, disassociated from the economic reality that the people survived in. Those calling for the vocationalization of curriculum, therefore, should be reviewing more than the curriculum before making such recommendations.

Foster was also highly critical of the kind of training that these vocational educational institutions offered. Arguing that: they lacked properly trained personnel and employment opportunities for graduates, there was a wastage of skills by trainees being attracted into other areas, equipment tended to be outdated or overly sophisticated and the overall academic level of the trainees was suspect. Instead, Foster recommended small-scale vocational training schemes that would be closely associated with actual on going developments but separate from the formal educational system. He was strongly opposed to any inclusion of vocational subjects into elementary or secondary curriculum, stating that a sound general education should be provided for first to enable future specialization, especially due to the fact that many such vocational schemes had failed in the past. The history of such vocational-type institutions was not encouraging. Many institutes were only half-filled and with students who, more often than not, were rejects from the academic system. Also, those institutions that were successful tended to be "transformed" into academic institutions.

In summary, Foster argued that, so long as the primary motivation for entering school remained the desire to escape from traditional agriculture, no amount of vocationalization of the curriculum (especially at the standard set in most of the schools) will keep the people "down on the farm." Foster recommends instead that formal education play a limited role in the area of agricultural change.

Foster's case against vocationalization of curriculum is very convincing. This is all the more so because of his interpretation as to why the demand for such academic subjects exists, why it is a rational demand and why the resistance to change will continue under present economic conditions. However, he further recommends against vocational education in the schools under any circumstance, citing the many problems experienced in the past and the general lack of interest as the major reason for such a position. Although his interpretation of the appropriateness of "inappropriate curriculum" is acceptable, his view of the role of education in the development of vocational and technical skills seems simplistic and uninformed. Foster displays no understanding as to the complexity, or for that matter, the value of training that he describes "can best take place on a small scale, perhaps on the job, but separate from the formal education system." Foster vastly underestimates the complexities of technical knowledge and training or simply overestimates the capabilities of industry and government to train and develop such knowledge and skills. He therefore fails to recognize the possible changing nature of the labour market. In this way his argument is as lop-sided against, as Balogh's is for, vocationalizing education.

This raises the related issue of the difficulty of changing curriculum. In the previous discussions we saw "consumer opposition" as a primary resistance to change. What then are the possibilities of change?

Theoretical considerations are discussed by Michael Young in "Curriculum change:limits and possibilities" (Young, 1976). In his article he examines two contrasting conceptions of curriculum, "curriculum as fact" and "curriculum as practice" and reviews the limits and possibilities of the theories with a view to assess whether or not they would be useful in transforming educational practice.

The curriculum "as fact," which can be considered the dominant view of curriculum, is described in terms of structure of socially prescribed knowledge, external to the knower, there to be mastered" (Young, 1976, pg 185). Here, curriculum is perceived as a set of gateways to a world of adult competence. It is subject-ordered, with a power relation existing between teacher and learner, where relatively passive teachers reproduce the knowledge produced elsewhere by others, to an equally passive receiver.

This model has been criticized as being dehumanizing and mystifying. It appears mystifying in the way it presents the curriculum as having a life of its own, the effect of which leaves education as neither understandable nor controllable by men. Dehumanizing because it does little more than redefine a world that the teachers and pupils already know. It confirms for the teachers both the irrelevance of the theory for practical change and their own insignificance as theorists. This theory fails in "not enabling people to become aware of changing their world" (Young 1976, pg.187). That is, the world which is about enabling teachers and pupils to theorize, rather than to learn that others' theorize about their practice.

The second major curriculum theory, "curriculum as practice," starts from a completely different premise. Here the learner is "an existing person mainly concerned with making sense of his own life-world (Young 1976, pg 185). The views of "curriculum as practice" do not start from the structure of knowledge but the intentions and actions of persons, collectively attempting to order their world and in the process produce knowledge. In education, the focus is on teachers' and pupils' classroom practices, with a subject curriculum that is not external to the students experiences but products of their own practices.

This theory challenges the prevailing views of knowledge and curriculum.

Young (1976) is not in agreement with this major theory either. In his opinion, it is an over-reaction to the persuasiveness of subjects, forms of knowledge and objects, which in itself can be a form of mystification. Mainly, he argues, because it reduces the social reality of curriculum to the subjective intentions and actions of teachers and pupils. Therefore, it limits the understanding of the historical emergence and persistence of particular conventions. We are then unable to situate the problems of contemporary education historically and therefore we are again limited in our understanding and controlling our own world. In short, it is misleading both theoretically and practically because it locates the possibility of change in education solely with the teacher's practices.

The author therefore dismisses both views of curriculum and the possibilities of change within them and instead discusses directions in which critical theory could transcend the dichotomy of "fact" and "practice." To summarize, he argues for making more explicit the political character of education and for a shift of responsibility to define education from the colleges and offices to classrooms and communities. This, he believes, will lead to the recognition that much of what we hope can be realized in education will not take place solely in the schools.

Young's conclusion that a successful change must occur outside the classroom, with a greater emphasis on political considerations, is supported by the literature. As we have seen, critical educational decisions made in isolation have failed to meet their expectations.

Curriculum, however, is not immune to change. It is useful now to examine a case where change did occur and determine how the successful changes were accomplished.

The case of Guyana "Secondary School Curriculum and Social Change in an Emergent Nation" (Bacchus, 1974) illustrates that necessary and important changes can occur, but that successful reform stems not so much from mere recommendations by educators/administrators. In this example, it was the overall societal changes, especially those affecting the economic reward structure, that were the impetus for change. Therefore if one is devising plans for curriculum change that are aimed at the level of influencing student career choices without clear cut economic or psychological rewards, one must be prepared for failure. In short, if jobs are available at competitive salaries in the vocational fields, students will consider substituting their academic courses for more vocational or technical oriented job-related courses.

This example also underscores the necessity for governments to do more than simply state in their educational policy that they support and encourage vocational and technical education. Educational planning must be linked with the overall economic and societal development.

A further study that supports this position and again demonstrates the misinterpretation of the "problem," is in a follow up work by Bacchus (1976) entitled "Some Observations on Social Structure and Craft Training in Economically Less Developed Countries," where he writes about "the inextricable link between the social and economic structures of these societies, their existing educational programs and their educational needs" (Bacchus 1976, pg 109). The evidence from this study suggests that the problem again is to be found in the assessment of "needs." The mistakes that we witnessed in the 1960s continue to be perpetuated in the 1970s, regardless of the existing theory suggesting otherwise.

In this instance in Guyana, criticism was again levelled at the educational curriculum because of the lack of emphasis on craft and technical training. Education was seen to be too academic, especially now that a growing number of educated unemployed were becoming more and more visible. The lack of emphasis on technical training and the perceived low quality of those who were employed in craft/technical areas, led advisers to again recommend a movement towards better and more abundant craft training.

However, the evidence indicates that the problem lay again in the incorrect assessment of "needs." For in this case unemployment was not due to the temporary shortages of trained craftsmen. In fact, the roots of the problem were deeper - the economy was simply not growing fast enough to absorb the numbers of people seeking jobs. Compounding this problem was the inadequate diagnoses of the nature of the labour market, which in this case consisted of two different and distinct markets, the modern and the traditional. This is important because both markets represented different "needs." The modern sector required formal training of a high standard, which was then rewarded with attractive salaries. Given this situation, there was no difficulty attracting trainees. On the other hand, the traditional market required cheap, less qualified labour. It was this type of craftsmen that was identified as requiring additional training. However, this market could never afford comparable incomes for formal trained craftsman.

However, to the experts the problem appeared to be strictly an educational one. Therefore, a proposal was developed for the rapid expansion of the formal craft training, with the belief that more and better trained craftsmen would obtain good jobs, thus reducing unemployment and assisting the economy by expanding production. Unfortunately, what further training did was quite the opposite to what was intended. The workers who had been in the traditional sector or who would normally have been employed in the traditional sector had, because of their more extensive training and their earnings expectations, now priced themselves out of this market and the modern market could in no way absorb these new, formally trained craftsmen. Therefore, the "solution" lead to higher rates of unemployment and wasted resources. Again, the real problem fell outside the school curriculum, which continued to be seen as the scapegoat for all current ailments. The problem here was not the lack of appropriate training, rather it was the lack of appropriate jobs.

This study is an excellent example of a development plan "gone wrong" and therefore should be one that educators in the field should learn from. One of the most serious criticism directed towards those working in international development - either individuals or institutions - is the accusation that the analysis of existing 'problems' is often delivered without a thorough knowledge of the social, political and economic conditions that exist in the developing country. Although today the trend is towards a more multidisciplinary approach to understanding problems of development, there still exists the situation of advisors being "parachuting in" to prepare assessments and deliver solutions without adequately understanding the "problem." Whether these advisors originate within the country or not, a thorough understanding of the situation is imperative. If not, the consequences can be devastating, as they not only lead to even higher unemployment but to raised and often unrealistic expectations. From here this misdirected development could ultimately lead to severe political repercussions, as the frustrations of more and more educated unemployed are expressed.

It now appears obvious that the debate on the relevance or irrelevance of curriculum has moved far away from the simple analysis of earlier studies. Today's informed debate is on a totally different level than the previous debates. For example, in "The Political Context of Vocationalizing of Education in the Developing Countries" by Bacchus (1987), after analyzing the problem, the conclusion leaves us in a very different place. Bacchus dismisses the argument that attempts at vocationalization of curriculum are rooted in political will alone. That is, the desire of dominant groups to reproduce the existing social order and maintain social control over the masses by reducing their levels of aspirations through the reproduction of vocational curriculum in the schools, is not the sole reason for desiring change. However, that having been said, what explanation can be given for the continuing attempts to address the question of "irrelevant" and "relevant" curriculum given the existing theory and practice?

According to Bacchus, the most important reason for the continuing resurrection of this old debate is the fact that key educational policy makers still believe that the main function of schooling is in the development of appropriate skills and attitudes to aid in economic development (human capital theory). If students are provided with useful, practical and vocational skills that are relevant to society, they will be in a better position to participate in the country's economic development. However, the continual proliferation and popularity of less developed relevant academic subjects over technical and vocational subjects has forced governments and educational planners to reassess the role of education in development.

Although the belief or hope is that vocational education will perform this function, the reality of the situation is this - the cost of such education is substantially higher than traditional academic education and graduates do not receive an appropriate return on their investment through higher economic or psychological rewards. The career choices of those participating in prevocational programs have not shown to have been greatly influenced by their studies. That is why theory tells us that attempts to vocationalize education should be abandoned in favour of policies such as universal education. However, as we have seen all available evidence goes against the logic of the argument resulting in yet another attempt to explain why the outcomes are not as expected.

Bacchus's conclusion is that there must be other variables operating within the particular socio-economic context which interfere with the expected relationships between technical education and higher productivity as measured by incomes. On this point he suggests that the failure at vocationalizing education is a result of the inappropriate development strategies that many developing countries activity pursue, i.e. inappropriate development strategies have largely produced the problem of negative rate of return on various educational programs. In the case of Bahrain, the government reward structure for those having a general education directly works against their stated policy for increasing and encouraging student participation in technical and vocational education. It is the export-oriented development strategies that have created little new opportunities for workers with high level vocational and technical skill. For example, most of the jobs created in the modern sector, where development efforts are directed, call for managerial, sales representatives or only simple mechanical skills that can be learnt on the job and therefore the job opportunities that were promised for more technically qualified students by these modernization plans were never realized.

Then, as a result of these faulty development strategies, conditions worsen until there were again repeated calls for changes in curriculum "despite the fact that available research evidence indicates that manipulation of school variables, will not help overcome the problem of underdevelopment or unemployment" (Bacchus 1987, pg. 43). The author further notes that concern over the curriculum issue only serves to draw attention away from the larger issue of ineffective development strategies. In the end, he concludes that educational strategy can only be made effective if it is an integral part of a much larger development strategy.

The conclusions as to what constitutes "relevant" and "non-relevant" curriculum are extremely significant to the whole curriculum debate. For, as discussed, the role of an academic education continues to be an important one despite the fact that it is often described as "inappropriate" - inappropriate because it has been developed in or directly modeled from curriculum in the advanced industrialized world. However, the fact remains that it can still be considered more "relevant" than the practical, skill-oriented or "home-grown" vocational education, because it leads to jobs in the modern sector. The whole debate and the ensuing problems of curriculum change revolve around the analysis and understanding of other questions that lie outside of education.

3.4 Summary of Education

The structure of the educational system in the Arab region inculcates the notion, in students and their parents, that a university education is the summit of all educational activities. This puts a high value on tracts that lead to a university education, and brands vocational and technical education with a low premium and second-class choice.

However, the development needs of the Arab region is clearly forcing educational institutions to respond to the demands for technical and vocational education at higher levels. To this end, dedicated institutes for technical and vocational education such as the Gulf Polytechnic in Bahrain are attempting to offer programs that are more relevant and appropriate for the needs of society.

However, as theory and practice have indicated, attempts at making curriculum more relevant has often failed because of the lack of understanding or correct identification of the problems effecting technical and vocational education.

There are many issues presented here that must be dealt with if a program of technical and vocational education is to be successful. What can be done by the respective governments to enhance the prestige associated with technical and vocational education? How can the social stigma attached to it be removed? How can technical and vocational education better reflect the current developments in industry and commerce? How can the curriculum and instructional methodology of technical and vocational schools be changed to conform to modern practices? How can appropriate facilities and equipment be used to include hands-on work and provide the much needed practical experience? What can the government do to attract and train competent teaching staff into the technical and vocational schools? What curricula would be appropriate to meet the needs of the trainees? How can real needs be assessed and curriculum developed to reflect them? What incentive programs can be devised to attract capable students in the technical and vocational schools? How can the parents be educated as to the real goals of technical and vocational schooling? What can be done to coordinate skills of technical and vocational school graduates and those needed in business and industry? If technical and vocational training constitutes a high priority, then why are not the respective governments increasing their investment in this type of training vis-a-vis traditional training?

The following chapter describes and analyses the developments that occurred at Gulf Polytechnic as they attempted to ensure that an appropriate and relevant education was being provided.

CHAPTER 4

A New Model for Technical and Vocational Education at Gulf Polytechnic, Bahrain

"Development is not a copied skeleton, but it is a soul that storms through the consciousness of a nation probing into it to offer what it believes will be the right road for it and for humanity" (Al-Baharna & Fakhro, Gulf Polytechnic, 1982).

4.1 Introduction

Any attempts at designing or implementing a successful program in the area of technical and vocational education must resolve many of the questions raised in the last chapter, especially if it hopes to be a viable alternative to traditional university education.

The purpose of this chapter is to describe and analyse the developments at the Gulf Polytechnic (G.P.) in Bahrain. In particular, the chapter describes the major changes that occurred as a result of an external assessment of G.P.'s engineering programs.

The assessment of the engineering programs was initiated out of a concern by senior Gulf Polytechnic and government officials for the quality and relevance of the programs. This assessment, which was undertaken by Ryerson Polytechnical Institute, Toronto, Canada, evaluated not

only the curriculum of the degree and diploma programs, but the external structures supporting the programs, such as the secondary school system and the industrial manpower needs.
As a result of this study and its recommendations, major changes were made to the existing curriculum and the structures supporting them. The following chapter describes and analyses G.P.'s attempts at building a "first rate" "relevant" and "preferred" institute of higher learning.

4.2 Gulf Polytechnic (G.P.)

Gulf Polytechnic was established in 1968 and is the oldest postsecondary educational institute on the Island. It began as an advanced vocational school and progressed steadily to its present position as a leading institution of higher professional learning in Engineering, Business and Management.

Its stated purpose is to meet the technical and vocational needs throughout the Gulf. The Bahraini government provides 70 percent of the school's operating budget, while the remaining 30 percent is funded by the governments of Qatar, the UAE, and Oman.

The number of Bahraini students studying at the institute has been increasing from 18 in 1968/69, 100 in 1978/79, 2000 in 1980/81, to approximately 2,169 students in the 1986-87 academic year (Shirawi, 1989).

4.2.1 Academic Programs

Prior to 1982-83, Gulf Polytechnic offered only two-year diploma and certificate programs in the Department of Management and Engineering. In 1982-83, the school began offering four-year degree programs in the Departments of Business, Management and Engineering.

The Business Studies Department offers programs in secretarial studies, commercial studies, accounting and business administration.

The Department of Engineering, which is the largest program at G.P. and the program that will be further described in this chapter, offers two-year Engineering Technology Diploma programs in the fields of:

- chemical engineering
- building engineering
- civil engineering
- land surveying
- computer science
- mechanical engineering
- refrigeration and air conditioning
- instrumentation.

Four-year bachelor's programs were introduced in 1982-1983 in:

- chemical engineering
- civil engineering

- computer science
- electrical engineering
- mechanical engineering.

There is also a comprehensive continuing education framework that caters to and incorporates the "10,000 Program" and offers specialized Business and Management diplomas ranging from clerical to the executive levels.

Admission to Gulf Polytechnic is selective. High school level applicants are evaluated on the basis of scholastic record, Tawjihi score, class rank, and academic recommendation. In the Engineering Department, the government has instituted a quota on the number of applicants entering the degree program. A ratio of 4 diploma graduates to every 1 degree graduate has been established in order to ensure that the necessary number of technicians and technologists be educated in relation to engineers.

The goals and objectives for the G.P. are very ambitious. It had attempted to accomplish in a few years what had taken institutions like Ryerson Polytechnical Institute, 35 years to accomplish i.e. the evolution of a technical college, into a degree-granting institution and lastly to be amalgamated into the University of Bahrain. However for the purposes of this study, the focus will be on the stage of development prior to this event. This dramatic process of transformation and upgrading was in direct response to the swift modernization that was occurring within the Bahraini economy. These rapid changes made necessary the review and evolution of the role and scope of the programs that were being offered at the Polytechnic. Throughout these developments there was always the strong desire to create an institution of the highest academic standards which would offer internationally recognized programs.

In more detail, the goals and objectives of the G.P. are as follows:

- To educate and train young Bahraini technicians, technologists and engineers to take over existing positions in Bahrain's industries, services and government agencies so as to continue the successful process of Bahrainization.

- To provide continued leadership in technological education that will ensure the supply of adequately skilled technical manpower for the future development of the Bahrain and the Gulf region economies.

- To act as a nucleus for a useful partnership among industry, government, and G.P. to promote applied research in the adaptation of imported technology to the Bahraini environment and to assist in seeking the solutions to technical, environmental and developmental problems facing Bahrain.

- To foster national pride and awareness among young Bahrainis in the importance of technology to Bahrain's future.

(source: The Constitution of the Gulf Polytechnic, 1981)

In reviewing these goals and objectives in light of the previous discussion, a number of problems can be identified which would interfere with their realization. For instance the lack of any specific manpower statistics in which to adequately determine present and future programming needs for Bahrain and the Gulf region leads to an inability to "ensure the supply of skilled technicians." Also, little or no contact with industry and other government agencies exist that would encourage the development of partnerships, and because faculty are drawn almost exclusively from academia no industrial links can be made in that way. Finally, the goal of fostering awareness as to the importance of technology has to be done before the student enters G.P. thus ensuring that the best possible student is attracted to the institute (RIDC, Phase III Report, 1984).

G.P. has been racing towards these goals in an attempt to adapt and develop to the ever changing need. It was the fact that G.P. had undergone so many changes and in such a short period of time that concern was raised as to the quality of its programs. This concern led the trustees of governors at Gulf Polytechnic to request the assistance of the Ryerson International Development Centre (RIDC) at the Ryerson Polytechnical Institute in Toronto, Canada, to do an assessment and evaluation study of both the degree and diploma programs in Engineering (the University of Beirut had been asked to do a similar study of the Business programs which it did prior to this request). The chairman of the Board called for a "bold, imaginative and innovative approach to engineering curriculum design without fear of not conforming to established patterns and conventional modes" (Gulf Polytechnic, 1984, p. 1).

As a result of this assessment dramatic changes occurred that have had a profound effect on the institute. It is through the process of this assessment and as a direct result of its recommended design that the changes which are now present in the curriculum and supporting structures occurred.

4.3 The Assessment Process

In assessing and evaluating programs at the Gulf Polytechnic, RIDC designed a process which involved evaluating the overall context of education in Bahrain and not merely that of the curriculum alone.

"It is the direct career-orientation of polytechnic programmes which, above all, serves to distinguish them from university programs. Thus in assessing the character, direction and quality of a set of polytechnic programs, it is as important to investigate the social, economic, technological and policy environment in which the programs exist as to examine the design, content and delivery of the programmes themselves" (RIDC Assessment Report, 1983).

This is especially important given the fact that polytechnic programs are by definition career-oriented. There emphasis is on knowledge and experience which is immediately useful and applicable to the student's career. Career programs, therefore, must blend the practical experiences of lab and industrial work with studies in the arts, social sciences and sciences thus allowing students "to broaden their understanding of themselves and their world and to develop their capabilities for creative thought and enlightened leadership" (G.P. Handbook, 1982). In the past, curriculum was developed without consideration of the overall context that education existed within.

4.4 An Assessment Design

With this consideration, RIDC's assessment process attempted to merge questions of societal relevance with those concerning the market for manpower. In order to do this RIDC strove through its assessment, to gain an understanding of the following key elements:

1. The specific manpower and skill needs of both private and public sector employers. Very few, if any, manpower studies were in existence. Results from these studies were considered crucial if basic programs were to be designed to meet with the requirements of the Island's sophisticated industrial economy. At the same time, concern was raised that programs should not totally reflect local requirements, as the desire to achieve international standards was also important.

2. The policy priorities of government. For example, "Bahrainization" of strategic occupations. How successful were the policies and what role should Gulf Polytechnic play in their implementation?

3. Academic standards and educational priorities. The main tasks identified by the Bahrainis were to strengthen

the foundations of the institution, to build academic credibility, and to respond to the needs of young Bahraini secondary school graduates. Academic standards, however, should not conflict with the goal of making the education more "practical" and job related.

4. The social and cultural context in which education takes place. The problem with curriculum change is that it is often dictated from outside with little or no input and knowledge of the social and cultural context in which the education takes place. The literature has shown that failure to address these areas, such as the ability of secondary education to support the entry of students into higher education and the ability of appropriate opportunities to support students after graduation, will lead to the failure of the curriculum change in obtaining the desired outcomes.

4.5 The Evaluation of Engineering Programs

The assessment began with an analysis of two major external structures to G.P., the secondary school system and industrial manpower needs.

4.6 Evaluation of External Structures to Gulf Polytechnic

4.6.1 Analysis of the Secondary School System

One of the important questions in the RIDC study was whether or not the high school curriculum provided an adequate basis for entry into G.P., and particularly the engineering programs.

The study found that there had been major changes undertaken in recent years to the structure of secondary school organization and programs in Bahrain and that these changes had a considerable effect on Gulf Polytechnic. The general effect of these changes was that the curriculum had shifted away from a purely academic approach to allow for more adequate preparation for the majority of students who will move directly into the job market. This had resulted in a dramatic expansion in the technical and commercial sectors with a steady increase in both the number of schools and the number of students seeking entry into full-time programs at G.P.

This transformation in the school system had brought with it a number of problems that directly effected Gulf Polytechnic.

Initially the shift away from an educational system with a strictly academic basis to one oriented more directly to the job market appeared to have benefitted Gulf Polytechnic. It in fact, did not. This is because although the curriculum was now more oriented toward technical and vocational education, it was not directed to their study at a higher level, but rather, at a level for those who planned to terminate their studies after secondary school. Those who wanted to go on in higher education but in a technical field, did not have the advanced preparation in certain subjects required by G.P.

The existing curriculum, therefore, either catered to those continuing into pure academic study or exiting into the labour force. Although a government policy ensured that 40 to 50 percent of the places in the engineering program at G.P. were reserved for graduates from the technical secondary schools, without adequate preparation at the secondary level, these students were not able to succeed at G.P.

More specifically, the curriculum failed to give adequate preparation in mathematics, science and English which were required at both the diploma and degree levels. The greatest deficiency appeared to be the limited competence of students in the English language. For example, in three years of secondary school study, students in the academically oriented schools receive 24 hours per week of instruction in English, while their counterparts in the technical schools received only 12 hours. Analysis of the responses to the Ministry of Education's employer survey indicated that 92 percent of the respondents identified English language competence as a major deficiency of Gulf Polytechnic graduates (RIDC Phase II Report, 1984).

Another problem identified by the assessment was the fact that secondary students, whether from the academic or technical stream, lacked preparation for postsecondary study in general. This was reported as a problem by both students and their instructors. For their part, teachers appeared unprepared to encourage student-centered rather than teacher-centered learning. Typical of other developing countries, teachers and students adhered to a strict pattern of rote learning, which was geared to the reproduction of material from assigned textbooks.

Also, the existence of the school-exiting examination (the Tawjahea) preoccupied students and teachers alike. Unfortunately, the factors making for success in the examination and thus entry to G.P., were not those that necessarily equipped students with the skills and knowledge base that is required for postsecondary education. A great need was identified for a more rounded approach to education so that students would be equipped with an adequate blend of study and life skills in addition to their academic requirements.

Student and parent expectations were found to be unrealistic in regards to engineering studies at G.P. and the job prospects that could practically be anticipated. Although the government determined quota on the number of students who could continue on to the degree program, it appeared that a high proportion of all entrants to the Polytechnic began their studies with the expectation of graduating with a degree. There is little or no awareness of, or interest in, the importance of technicians to Bahraini industry and there also existed an unwillingness on the part of the typical student to recognize the very real probability that he/she would not obtain admission to the degree program.

The recommendations that followed from the evaluation of the secondary school system were as follows:

1) increased emphasis needs to be placed on the English language at all schools with an allocation of additional hours in technical schools,

2) increase the number of hours devoted to math and science in technical schools,

3) the introduction of two streams within the technical sector, academic and vocational, in an effort to cater to the learning priorities of both those interested in continuing their education or those wishing to terminate their studies at the high school level. The new system was likely to result in better qualified technical school graduates applying to G.P.,

4) upgrading lab facilities to teach science subjects in both academic and technical streams,

5) in-service training for teachers to equip them with the knowledge and skills required for a more varied range of teaching methods and curriculum delivery,

6) need to open channels of communication between schools and G.P. so schools could provide effective counselling to students contemplating application to G.P.

(Source: RIDC Phase II Report, 1984)

The major challenge to the implementation of the above recommendations was Bahrain's ability to train and recruit or upgrade the secondary school teachers to deliver the new curriculum and to handle the increased student enrolment.

The shortage of qualified Bahraini teachers was particularily acute in the case of technical schools.

4.6.2 Analysis of the Industrial Manpower Needs

The RIDC team held, along with their G.P. counterparts, extensive meetings with a broad range of representatives of the major public and private employers. As a result of these meetings, it was possible to arrive at a general picture of the present and projected manpower needs for skilled and professional labour in the different engineering fields.

In summary, G.P. graduates had the potential to play a major role in the following industrial areas:

1) Oil, Gas and Petrochemicals Industries
2) Aluminum, Iron and Steel, and Related Industries
3) The Construction Sector and the Related Industries.
4) Infrastructure and Services

In the discussions with the different employers, the team was able to define not only the general needs but more specifically the professional classification that were most urgently needed by these industries. In fact, Bahrain employees indicated a requirement for seventeen professional classifications, at both the technician and engineer levels.

In addition to the demand for manpower being confirmed and the specific areas of greatest need determined, the assessment process uncovered additional findings that proved to be important.

1. There was a lack of knowledge in many places about the Polytechnic, its programs, its objectives and the role its graduates could play. Many companies and government agencies had traditionally sent their sponsored employees overseas for training and education (i.e. the British Guild). Although this practice was popular with Bahrainis, G.P. should be seen as an alternative to overseas training.

2. Those industrial professionals and even training managers who were familiar with the G.P. offerings, viewed the diploma program to be too theoretical, too broad for their narrowly defined skill needs and involving too great a time commitment for sponsored students to complete.

3. Professional practitioners expressed their interest in helping G.P. by making themselves available to teach in the diploma program or on a part-time basis, and to teach specialized seminars. This would enhance G.P. offering, especially in view of the fact that relevant industrial experience within the faculty was seen to be one of the general weaknesses of the program.

4. It was determined that in most industries a typical successful working engineer began as an technician, and then acquired further educational upgrading. Such practical engineers were well represented in industry. This supports the position that what was needed at the Polytechnic were programs that graduate practical or operating engineers, whose education has equipped them more

fully to meet the demands of their careers as opposed to the graduate with a more theoretical preparation that was being produced. This is especially important because many graduate engineers, especially in the public sector, were required to do technicians' work.

5. Many people from industry expressed their willingness to work on an industrial advisory committee.

6. The gap between the salary of technicians and engineers, especially in the public sector, created a situation where most technicians, especially the young ones, looked for any opportunity to improve their education and possibly obtain a diploma or a degree. The creation of a position of technologist or working engineer was seen as a positive step in meeting local demand.

4.7 Evaluation of Internal Structures

The assessment focussed next on the internal structures within G.P.; the admission standards and the curriculum.

4.7.1 Admissions Standards at the Gulf Polytechnic

Admissions standards and policies are an important consideration to the success of any institution. The assessment highlighted a major problem in admissions that directly interfered with the success of the engineering program.

This was that the entry to the Polytechnic was almost completely determined by the student's score on the Tawjahea with entry standards determined in advanced. However, the Ministry of Education had set a 4:1 ratio for degree to non-degree graduates. This ratio created even more competition for the limited degree spaces. To ensure that only those students most likely to succeed entered the degree program, standards in some form or another would have to be strictly maintained. At the time of the assessment, students could transfer into the degree program from year two of the diploma program, thus circumventing the ratio stipulation which was enforced in year one only. The major issue was how to raise standards without handicapping the students from the technical secondary schools who begin their studies with a considerable academic disadvantage.

As previously discussed, the secondary education background did make a difference. The students from the technical schools were found to be weak in math, physics and English, but on the other hand, they were better prepared than the academic students in shop practice, technological studies and engineering graphics. In response to these differences, a customized orientation year was recommended in order to offer technology students extra math classes and academic students extra shop practice and engineering graphics classes. In addition, the remaining time was to be allocated to developing and reinforcing English language skills, which was recognized as a weakness for both groups.

4.7.2 Analysis of the Curriculum at Gulf Polytechnic

The curriculum, both degree and diploma, was evaluated using three sets of criteria; the Ryerson Polytechnic Institute Internal Academic Standards Evaluation Process, the Accreditation Board of Engineering and Technology (ABET) and the Canadian Accreditation Board (CAB).

To begin, the team found the existing program structure, which was based on the recommendations of advisors from the University of Petroleum and Minerals (UPM) in Saudi Arabia, to be unsuitable due to the following:

1) The curriculum was overly theoretical. This is especially problematic given the fact that Bahraini students generally had relatively little contact with technological products on a day to day basis especially in comparison to their counterparts in North America and Europe. The Polytechnic, therefore, had to create a technologically intensive environment where students were provided with access to well-equipped laboratories and given adequate time to spend on experimental projects. This approach would encourage students to catch up with their counterparts in more advanced industrial societies. Copying an American curriculum, such as that in place at UPM with its de-emphasis on laboratory work, was a decision that the RIDC team felt unsuitable for the proper technological development of Bahraini students.

2) The UPM model had a low number of contact hours in the classroom. This was because the program was supposed to be

augmented with large amounts of independent work in labs, libraries, and computer facilities. However at G.P. the facilities were not well developed, and the students were unfamiliar with the practice of independent study.

3) UPM assumed that there was a high level of academic maturity in the faculty and staff. G.P. does not have the level of human or financial resources of its wealthier neighbours and therefore efforts needed to be directed towards adopting a model that was better suited to its resources, needs and objectives.

Analysis of the Curriculum in the Diploma Program

As stated above, the existing curriculum in engineering was found to be inappropriate to the Bahraini needs. More specifically, some of the major problems in the diploma program were as follows:

1. The diploma studies at G.P. lacked purpose and objectives. This was seen mainly as a result of the rapidity of the program development coupled with the absence of any well-established international standards in the non-degree field. What was needed was a detailed evaluation of present and future manpower requirements with particular attention to the levels and types of education called for by the employers. To date, the focus had been on the degree rather the diploma programs, as it was the degree programs that were preferred by both faculty and students. This emphasis could not be justified especially

given the 4:1 policy that increased the number of diploma students in all programs.

2. The diploma programs were diluted and less demanding versions of the degree program. Students regarded the diploma as a second-rate alternative to a degree, while the employers considered it too theoretical in orientation and too demanding in terms of required duration of study.

3. The job situation awaiting diploma students was less certain. There was no doubt that a substantial and continuing demand for technicians, technologists and middle management personnel in engineering fields existed. However, there was a lack of public and employer appreciation of the value and potential of diploma graduates. Many employers still regarded overseas study as preferable to the programs offered at Gulf Polytechnic. This perception by employers and particularly the expatriate employers, underlined the general prejudice against Bahrain's ability to develop its own programs.

4. It was discovered that the faculty teaching in the diploma programs had limited linkage with industry. Faculty needed to become involved in the ongoing discussions with industry to ensure that the program and curriculum developments took place as a direct response of the changing industrial and employment patterns.

It was also discovered that faculty teaching in the diploma area did not have sufficient industrial experience, especially experience in the Bahraini context. This was perpetuated by the hiring practices at the Polytechnic which favoured academic credentials over industrial experience. This practice led to a general weakness in all the applied portions of the program. Expertise in this area could come about by tapping the talent of Bahraini professionals employed in government and industry. The team recommended that 25% of the faculty teaching in the diploma programs should be seconded from industry.

5. The gap between the financial rewards available to degree and diploma graduates, particularily in the public sector, was a significant factor in reinforcing the public view of technician as a low status occupation. If this problem was to be seriously addressed, G.P. must raise this matter with the appropriate Ministers and officials. Particular emphasis had to be given to the restructuring of the Civil Service Bureau salary and the promotion scale.

Analysis of the Curriculum of the Degree Program

The assessment of the degree programs also uncovered many important issues that must be addressed if a new curriculum or the adaptation of an existing one was to be successful. A major issue, in addition to what has already been discussed, was that laboratory work was not given sufficient emphasis. This had resulted in programs with an insufficient practical base which was not in keeping with the manpower demands of the region. It was also discovered that students received an inadequate preparation in the practice of computer analysis for engineering.

Recommendations For Change

As a result of this assessment, a number of recommendations for change were made in the areas of program structure and academic and administrative policy.

During the assessment process, it became apparent to the members of the Ryerson team that there were grounds to the criticism by industry and concerns of the Board of Governors, in regards to the programs at G.P.

In order to enable the engineering programs to continue to assist industry in meeting its diversified manpower needs, the team recommended changes not only to the curriculum, but also to the basic structure of the existing academic programs. These changes were to result in the graduation of degree and diploma students who had a well-balanced blend of engineering science fundamentals, technological applications and industrial experience.

4.8 Strategies for Changes in the Engineering Programs

An overview of the strategies for changes in the engineering programs at G.P., with specific reference to advantages and disadvantage of each option, as recommended by the RIDC team, is outlined below.

1. The "Engineering Science Strategy"

In this strategy, G.P. would concentrate on a degree program in engineering science using a model based on existing programs in Western Europe or North America which could be slightly modified to suit Bahraini needs. Engineering technology programs would be delivered at a low level, and left either solely to the technical secondary schools or possibly to the schools in cooperation with technical training centres in industry.

Advantages:

-The graduate would presumably have educational backgrounds similar to those of the expatriates they would replace; first in technical positions and later as managers.

-The program would be easy to evaluate and relate to international standards, at least on paper.

-Curriculum design would be more straightforward for young faculty members with little teaching experience. The program would be similar to the programs from which most faculty members would have graduated.

Disadvantages:

-This strategy clearly did not meet the constraints imposed by present or anticipated industrial needs, and would very quickly result in a surplus of engineers, who supposedly have a versatile background, but who in reality would have had very little practical experience. As a result, many would have been obliged, because of economic conditions, to work as technicians or to leave the country and seek employment elsewhere. This would be a very expensive approach to the development of manpower skills.

-The cost of hiring faculty with the appropriate qualifications to teach at an engineering science degree level would be high.

-The program would generally be beyond the capacity of technical school graduates, unless a separate and enriched orientation year was designed to give the students a better opportunity for competition against their academic school counterparts. In general, such a course of action would be financially non-viable.

2. The "Engineering Technology Strategy" - The Diploma Option

In this strategy, G.P. would concentrate on certificate and diploma programs in engineering technology and try to work out a cooperative arrangement with one of the region's established universities, such as the University of Petroleum and Minerals in Saudi Arabia, for the transfer of selected graduates of the diploma program through a bridging program to the upper two years of its engineering programs.

Advantages:

-G.P. would concentrate on providing creative and excellent certificate and diploma-level programs to all of its students.

-Graduates from the diploma and certificate programs would be able to meet more than 80% of present and anticipated manpower needs of industry, business and government.

Disadvantages:

-G.P. would not be meeting one of its goals; i.e. to act as a nucleus to generate industrial research capability in Bahrain and foster a sense of national pride in its post-secondary institutions.

-G.P. would possibly fail to attract the better calibre of secondary school graduates, who would probably opt for studies at institutions that offer them the opportunity for degree studies.

-Prospective faculty members would be less attracted to an institution that did not have degree-level programs.

3. The "Engineering Technology Strategy" - The Degree Option

In place of the present system, G. P. would develop a degree program in engineering technology that would be characterized by less emphasis on modern design techniques and sophisticated high technology elements in the curriculum. In its place the curriculum would contain a large element of courses in industrial management, production technology and organizational strategies.

Advantages:

-The majority of the graduates would be able to move readily into middle management positions in industry and government after a short internship program, since the educational background of such graduates would not be greatly different from that of the expatriates they replaced.

-The program would produce graduates with a mix of technical and managerial skills that would be very useful to industry.

-The program would offer equal opportunities for success to both the technical and academic secondary school graduates.

Disadvantages:

-The task of developing the curriculum would be more demanding because of the lack of existing well-developed international models.

-Faculty would most likely not find this option attractive because of the absence of upper level engineering courses and the almost total lack of a research component in the program.

-While this strategy was clearly workable in the sense that an acceptable curriculum could be devised and implemented, it is not entirely clear that the graduates produced by such a program would have been optimally prepared for their career path because there would have been little opportunity for evaluation of the subsequent career performance of such graduates.

4. The "Engineering Technology/Science Strategy" - The Existing Program

In this strategy, G.P. would continue to improve the existing structure by providing full-time diploma and degree programs with separate tracks after a common orientation year.

Advantages:

-The faculty would be fully familiar with this strategy, which separates the diploma and the degree programs after a common orientation year.

-The degree program follow well-established, internationally accepted parameters.

Disadvantages:

-This strategy would not allow an equal opportunity for technical secondary school graduates to compete for places in the degree program. These graduates would be placed at a distinct disadvantage in the orientation year.

-Because of the parallel nature of the diploma and the degree programs after the orientation year, the diploma program would be conceived as a second class program by both faculty and students.

-In spite of the stated goals and objectives of G.P., the government policies, and the clearly indicated need for more diploma than degree graduates, the allocation of human and financial resources would be distorted in favour of degree over diploma programs.

-Faculty hiring policies and salary structures favour faculty members with academic credentials suitable for teaching at the degree level over those with useful industrial experience suitable for teaching at the diploma level.

-As a result of the low priority placed on the diploma programs, little attention has been paid to the design of its curriculum. Consequently, programs have taken shape as watered-down versions of the degree program. There was very little evidence of creative and innovative curriculum design. Graduates from such programs would be inadequately prepared to meet the needs of industry.

5. The "Engineering Technology/Engineering Science Strategy" - The Proposed New Program

The following proposal was designed to enable G.P. to put in place a set of programs aimed at producing practical engineers and technicians/technologists. This option was a two-tiered system designed to ensure that all students complete the diploma program first, and that only those with the appropriate combination of academic grades and industrial experience proceed to the degree program.
Figure 1 and Figure 2 outline the past and proposed structures of the engineering program.

In this structure, G.P. would continue to offer both diploma and degree programs, but would require, after a customized orientation year that all students must first finish a 2-year diploma program, followed by an industrial attachment, leading to a Diploma in Engineering Technology. Diploma holders with appropriate academic credentials and industrial experience would then be allowed to continue their studies in the degree program for two years, after first successfully passing through a bridging (or transition) phase with make-up courses in mathematics, science and engineering science.

Advantages:

- The strategy would be better suited to meet the government's policy guidelines of ensuring the maintenance of a 4:1 ratio of diploma to degree graduates.

Figure 1.

General Engineering Program Structure, Gulf Polytechnic

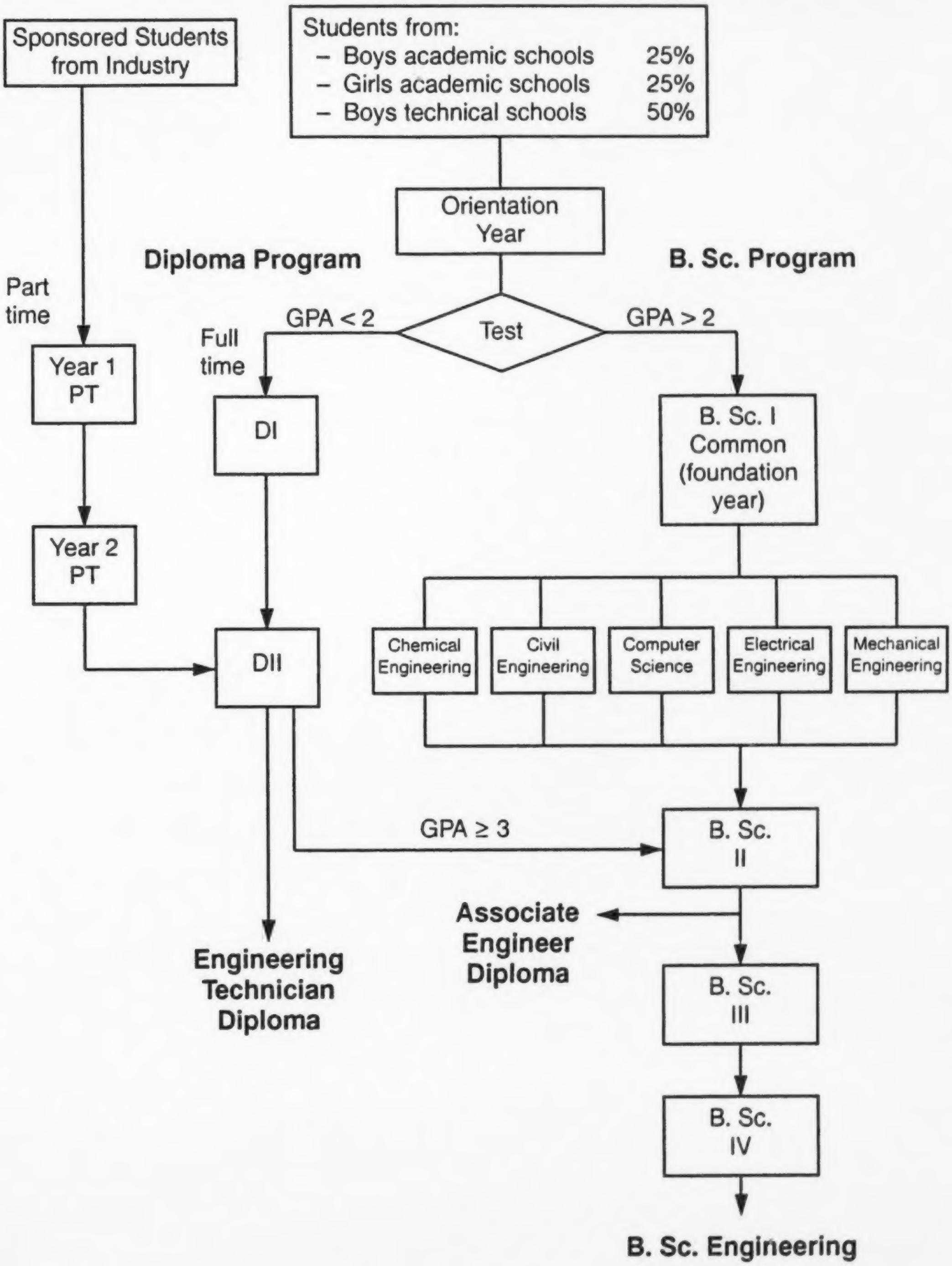
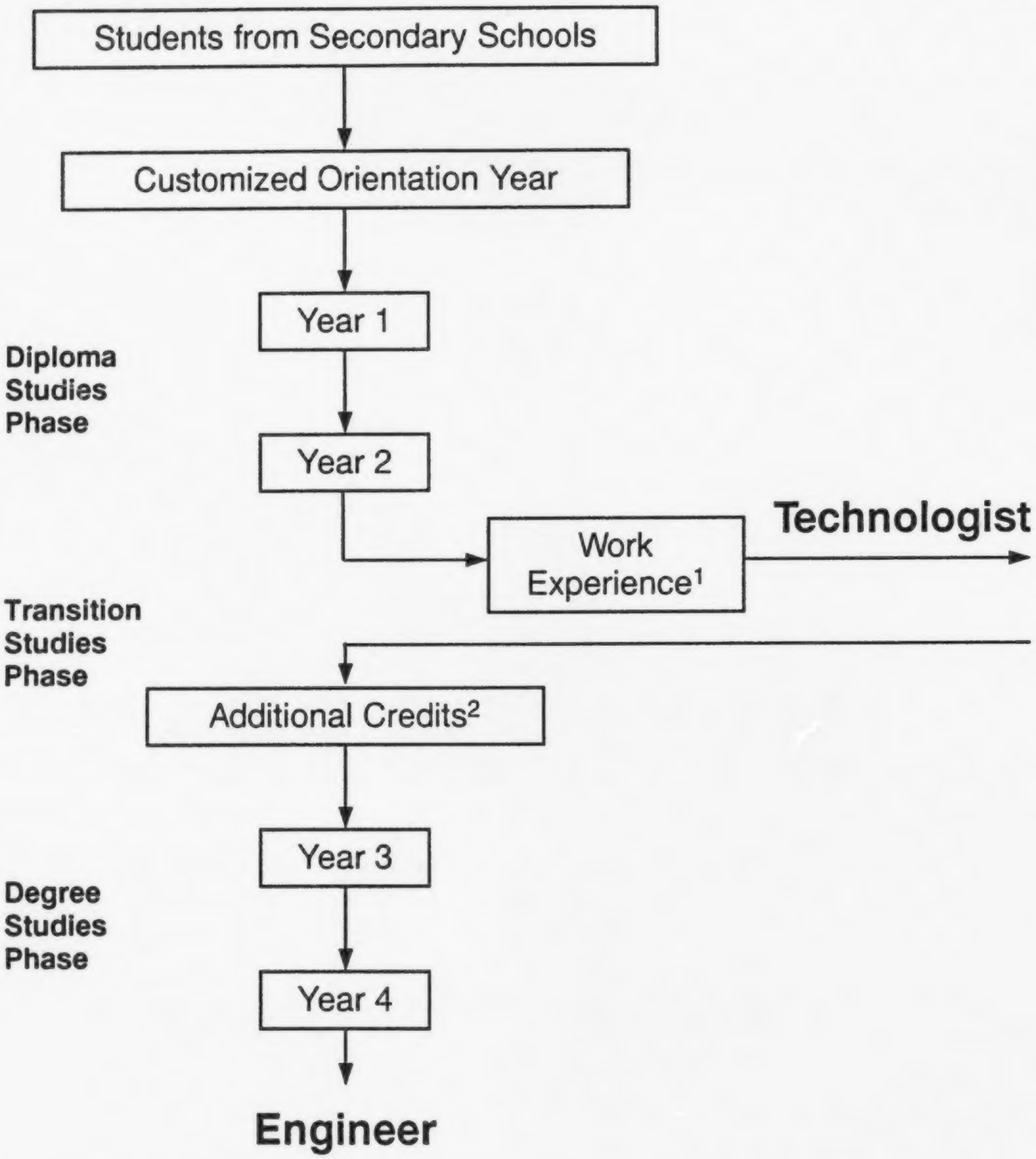

Sponsored Students from Industry
Students from:
– Boys academic schools 25%
– Girls academic schools 25%
– Boys technical schools 50%
Orientation Year
Diploma Program
B. Sc. Program
Part time
Test
GPA < 2
GPA > 2
Full time
Year 1 PT
DI
B. Sc. I Common (foundation year)
Year 2 PT
DII
Chemical Engineering
Civil Engineering
Computer Science
Electrical Engineering
Mechanical Engineering
GPA ≥ 3
B. Sc. II
Associate Engineer Diploma
B. Sc. III
Engineering Technician Diploma
B. Sc. IV
B. Sc. Engineering

Figure 2.

Proposed Academic Structure for an Integrated Engineering Program


Students from Secondary Schools
Customized Orientation Year
Year 1
Diploma Studies Phase
Year 2
Work Experience[1]
Technologist
Transition Studies Phase
Additional Credits[2]
Year 3
Degree Studies Phase
Year 4
Engineer

1. Work experience of six months minimum relevant attachment.
2. Additional credits in science, mathematics, engineering science and basic engineering courses must be made up before entering the third year in the Degree Program, and can be obtained through:
    i. Full-time studies in spring and summer programs;
    ii. Part-time studies in a continuing education program;
    iii. Additional courses in an enriched program during years 1 and 2 of the diploma program.

- The customized orientation year program, which would be followed by the two common years of diploma study, would have enabled the technical school student the opportunity to compete more effectively for the limited places available for degree studies in year 3 and 4 of the program.

- The fact that all of the students must complete the common diploma first, would remove the stigma of second class status from the diploma program.

- With the majority of students and faculty involved in the diploma program, the program would be assured of the proper allocations of human and physical resources.

- The common pool of diploma graduates with useful industrial experience would provide an excellent base for selection of good candidates for the degree program rather than the type of student who at present proceeded directly towards the degree program from the secondary school entry.

- Degree students who possessed the appropriate mix of traditional broad engineering science education in addition to useful industrial experience would result in engineers who would be better prepared than graduates from conventional engineering science programs to take over key positions in industry.

Disadvantages:

- Program structure would be less familiar to most faculty than the present structure.

- It would be necessary for the G.P. administration to do some basic "missionary" work to explain the proposed program to faculty, industry officials, secondary school officials, students and their parents.

- Curriculum design and development would be more demanding, especially for the transition and degree phases.

4.9 The New Model

After consideration of the above strategies, the G.P. Board of Governors accepted the "Engineering Technology/Engineering Science Strategy" option. Bahrain now has graduates from this program.

In order to accommodate this new model, however, a number of changes in the academic and administrative framework of the Polytechnic had to also occur. In summary, additional changes required were:

1. The Integration of Diploma and Degree Studies in Engineering

To strengthen the diploma and to break down the status distinction between degree and diploma studies, it was proposed that no student should be admitted initially to the degree program after completion of the orientation year. Rather, all students completing orientation would enter the two-year diploma program instead. Of those who graduated, approximately 25% would be allowed to enter the degree program, for a further two years of full-time study. Before graduating with a degree, all students would be required to complete an industrial attachment of at least six months duration. Students admitted to the orientation year would be advised that they must proceed first to the diploma program.

2. Curriculum & Program Organization

A customized orientation program for year one would be necessary to allow time for the students coming from technical and academic secondary schools to strengthen identified areas.

3. Program Structure of the Degree Studies

The new program structure would represent a challenge for engineer curriculum designers. That is, the new structure required that all students must first complete a diploma program which was primarily targeted to meet industrial needs and therefore was more applied that theoretical. The problem with this was that although the math and scientific foundations of such a program would be entirely adequate to meet the needs of industry, they were somewhat lower than those needed as a foundation for an engineering degree program. In order to bridge the gap, the design of an intensive, make-up transition program, followed by a modified program of engineering studies for two years would be designed. The emphasis in those later two years would be similar to a more traditional engineering program. In the proposed new approach, the student would become involved in engineering applications in the diploma phase of studies at a somewhat elementary analytical level which would be followed by a period of industrial attachment. At this point the degree student would be provided a second and more advanced look at most engineering applications. The student would now be armed with valuable industrial experience, as well as having additional math and engineering science courses.

4. New Structures of Academic Management

RIDC recommended the creation of three engineering departments to replace the existing one, each with its own department head. These three engineering departments would together constitute the Division of Engineering.

To ensure that diploma programs receive the detailed attention that they would require, it was also proposed that each department appoint an Assistant Department Head for Diploma Programs. Where a department was responsible for more than one diploma program, an additional assistant head would be appointed. Under the new system, the Assistant Head of the Department for Diploma Programs would bear primary responsibility for years one and two of the combined program, as well as for the part-time studies. Therefore, the diploma program would have its own administrator.

5. Industrial Liaison Committees

In addressing the need for better liaison between faculty, administrators and industry the recommendation was made for the formation within each department of an Industrial Advisory Committee. The composition of such a committee would include at least five prominent practitioners in industry who would help to provide guidance in the development curriculum that best met with local needs.

6. Promoting the Engineering Profession in Bahrain

It was recommended that G.P. actively participate in promoting the role and strengthening the visibility of engineering in Bahrain society, and in providing a focus for professional activities. This could be accomplished by the departments seriously promoting and expanding the membership of professional associations as well as encouraging professional development and continuing education activities.

4.10 Summary

The Board of Trustees and Administration of Gulf Polytechnic, the largest technical and vocational post-secondary institute in Bahrain, sought assistance from Ryerson Polytechnical Institute to undertake an assessment and evaluation of their programs in engineering.

This was prompted by the fact that it had only been three years since the Institute had been upgraded to the Gulf Polytechnic, with the authority to grant its own degrees. Since that time G.P. had worked continuously to upgrade the curriculum and to put in place the necessary infrastructure to facilitate this process. However, developments were so rapid that G.P. became concerned that in their efforts to move away from the reliance on externally developed programs, that academic standards had suffered.

The RIDC assessment involved all aspects of academic activities at Gulf Polytechnic, as well as an examination of the linkages which existed between the schools, principal employees and the Polytechnic. Detailed consideration was given to such matters as quality and suitability of faculty, academic organization, preparedness of students for post-secondary study in the engineering and technology fields, the specific requirements of industry, and the concerns of employees vis-a-vis the character, content and objectives of the engineering programs.

From the assessment, a series of strategies for academic development was presented to G.P. A preferred option which involved the development of a new model for engineering education was approved and implemented. This model was unlike traditional models used elsewhere in the region and was characterized by a new common orientation year, a work place component in the degree program and the collapsing of the diploma and the degree streams into one program.

The re-structuring of the engineering programs resulted in a new model that assisted in overcoming many of the problems with technical and vocational education that have been discussed in this study. The following chapter draws implications and recommendations resulting from this study.

Chapter 5

Summary of Findings and Recommendations

5.1 Introduction

The final chapter provides a summary of findings and draws some general recommendations from the study.

The purpose of this study was to provide a descriptive analysis of the development of higher technical and vocational education in Bahrain as it attempts to meet the growing demands of the country's economy. Specifically, the intention was to assess the program developments at the Gulf Polytechnic leading up to 1985 when significant curriculum changes occurred.

Attempts at vocationalizing the curriculum have often met with limited success, usually not as a result of faulty curriculum, but because of the influence of other factors that operate outside the educational sphere. Therefore, the study also provided a brief descriptive analysis of the social, political, historical and economic background of the country which had a great impact on the likelihood that its technical and vocational education would succeed. This involved identifying the major problems and constraints to technical and vocational education in the Middle East in general and Bahrain in particular.

5.2 Summary of Findings

A number of research questions were raised in Chapter One (page 4) which guided this study. The following discussion provides a summary of these findings.

First, the question as to whether or not there was a real need for technical and vocational graduates in Bahrain was determined. Bahrain had ambitious plans for modernization and development and these plans created a great demand for skilled and trained personnel.

Second, trained manpower shortages did indeed exist in Bahrain, particularly in the technical and vocational areas. The assessment of engineering programs at the Gulf Polytechnic identified seventeen professional classifications, at both the technician and engineer levels, that were most urgently needed by local industry. In addition, the Government of Bahrain was attempting to Bahrainize the workforce which consisted of approximately 50% expatriates, many of whom were in the technical and vocational fields.

Third, higher education in Bahrain was expected to play a major role in its development. The emphasis on human resource development, in particular in the area of technical and vocational education, was therefore essential to Bahrain's present and future modernization plans. This was witnessed by the fact that even though Bahrain is a small country it had five institutes of higher learning, three of which were devoted to technical and vocational education. With the growing industrialized economy, future development plans, and Bahrainization of the workforce, a great demand for skilled and trained personnel was created. This was to enable the country to achieve a sustainable level of economic development.

Fourth, the question of the status of technical and vocational education vis-a-via university is clearly seen by the overwhelming preference of students for university education. At the present time only 15% of the students are pursuing studies in the technical and vocational areas. The status problem is rooted in the historical, cultural and economic traditions of Bahrain. Historically, the Arabs like other peoples in the developing countries view this kind of education as something leading to manual labour and fit only for the children of the poor. Culturally, university education was held in great esteem and a high value was placed on a university degree. Economically, the rewards (salary, status, job preference) for a university credential further enhanced the value of traditional higher education. Technical and vocational education lacked status and was viewed largely as a second-class choice.

Fifth, present educational developments in Bahrain have been influenced by past developments. Consideration needs to be given to the social, political, and economic developments because many of the current problems have their origins in the country's past. Since the discovery of oil, major changes had occurred in Bahrain which lead to today's "modern" society. The recent history of the country has demonstrated the adaptability of the Bahraini people. These changes had transpired, however, while still keeping the rich Arab traditions and Islamic culture. Present educational developments must continue to reflect this unique balance between the past and present.

Sixth, theory and practice have indicated that attempts at making curriculum more relevant have failed most often because of a lack of understanding of the social, cultural and political context within which the education existed. As well, there has been an incorrect identification of the problems affecting technical and vocational education.

Curriculum changes were made at the Gulf Polytechnic after recommendations from an assessment of the engineering programs at the Polytechnic. The design of the assessment and evaluation study itself varied from other reports of this type because it investigated the social, political, economic and technological environments in which the programs existed, in addition to examining the design and the quality of the programs and the Institute itself. The evaluation, which was brought to completion over a period of fourteen months, was conducted in conjunction with faculty and administrators at the Polytechnic. This differs from many consultant reports which have a "parachutist" approach often leading to recommendations that stem from an incomplete knowledge of the problem.

Seventh, the major barriers to technical and vocational education are summarized as falling under the following areas: a preference for university education over technical and vocational education; societal attitudes; lack of financial incentives; and relevancy of curriculum.

Eighth, the new structure and programs developed at G.P. as a result of the recommendations from the assessment of the engineering programs had resulted in innovative and valuable changes at the Polytechnic that diminished and in some cases eliminated a number of the problems associated with technical and vocational education. Although the new program addresses many of the problems discussed in this study, a number of issues still remain.

In summary, the re-structuring at G.P. addressed major concerns in the following way:

A. Preference for University Education over Technical and Vocational Education

The preference for academic over technical education was addressed in a number of ways with the adoption of the new model. First, more academic subjects were incorporated into the curriculum thus satisfying the demand for general education. To do this successfully however, the number of practical subjects were not to be sacrificed. G.P.'s new program approached this problem in a unique way by extending the program by one year. The new engineering program, although longer, reflected a better balance of academic and technical courses which in turn better reflected students' preferences and industry needs.

Second, the fact that the technical program was assessed against internationally recognized criteria gave it a higher status. That is, it was not regarded as a dead-end choice but a possible stepping stone to graduate and post graduate studies. In the past, problems were encountered when graduates sought recognition and credit for the degrees or diplomas received from a polytechnic, especially in comparison with traditional universities.

Third, graduates were selected into the degree program after the diploma course had been completed and not before the program began, as was previously the case. Although the quota on degree versus diploma still existed, a fairer selection would now be made allowing students with the diploma to carry on their education and obtain a degree.

The preference for university education over technical education is a strong one and the new structure still does not address the desire of students and parents to attend a university over a technical institute whatever the program of study might be. That is, even if the curriculum is more relevant and appropriate there will still be a preference for a degree from a "university". Change therefore, is required in the attitudes of a society towards technical and vocational education.

B. Societal Attitudes Regarding Technical and Vocational Education

One of the most urgent recurring problems that has been identified in the area of technical and vocational training is that of status. The solution to this problem is also one of the most difficult because neither the wealth of a nation, demand and desire of governments, nor stated national and/or international need, can alone change the perceptions of technical and vocational education and the continuing desire to obtain a high status university education over a technical and vocational education.

Attempts at promoting technical and vocational education in the past ignored the fact that education and status are closely linked, that parents and students alike equate education, especially higher education, as a status indicator, and that any changes to internal or external structures effecting technical and vocational must in some way address the status question if it wished to be successful.

The new program at G.P. addressed the question of status in several ways. First, admission standards were raised thus influencing the quality of students entering and graduating from the program. A higher quality of student helps to dispel the notion that technical education is only a second-class choice for those students who have failed to get into the academic stream. With higher standards there will be more competition for admission and with that a greater sense of accomplishment and value on being accepted into the program. How the students themselves perceived their program has a lot to do with raising the status outside the institute.

The new engineering program will be graduating "new" engineers who have the blend of theory and practice that is most vital to Bahrain industries. These graduates will be a solid reminder of the quality of the education and the value of G.P. graduates. As the standard of graduate increases so does the status attached to the specific education.

The new structure was also expected to increase the status of the diploma students by erasing the distinction between the degree and diploma streams. In the past the diploma stream was seen as inferior to the degree by both faculty and students and the stereotype of second-class education was reinforced. With students together in one stream, the diploma students have an increased status, with a more egalitarian structure to support their studies.

Also, the recommendations to form industrial liaison committees and to encourage the active promotion of the profession by local engineers will assist in enhancing societal views. This will be accomplished by first raising awareness of the profession and secondly by raising the profile of the profession by actively marketing its role and importance in society.

C. Lack of Financial Incentives for Technical and Vocational Education

Lack of status, financial rewards, future mobility and other incentives have resulted in technical and vocational education graduates choosing to take positions in administration and other unrelated areas. This new structure has no direct impact on this barrier to technical and vocational education. Unless the government is willing to stop rewarding university education to a greater extent than technical and vocational higher education the gap will remain between the two areas and educational choices will continue to be made in favour of the higher financial and other rewards given to university graduates.

D. Lack of Technical and Vocational Trained Teachers

The lack of qualified teachers has been a major stumbling block to the successful expansion of technical and vocational education. In the past this problem was twofold. First, there were not enough teachers who had the qualifications as technical educators and second there was a definite bias towards hiring teachers based on their academic credentials only (i.e. G.P.'s policy is to hire only Ph.D's). This has led to a lack of practical industrial experience among the faculty which greatly effected the quality of the program.

In the new structure, a solution to the lack of practical experience among the faculty could be overcome, in part, by utilizing Bahraini's working in industry, either as part-time instructors or through their participation on Advisory Committees. These faculty would bring the Bahraini industrial reality into the classroom, create closer linkages between industry and the educational institution and be a vital link for graduate placements. Prior to the assessment and evaluation, little to no contact existed between industry and the Polytechnic. This ongoing relationship is essential to ensuring that G.P. programs continue to be relevant and appropriate.

E. Relevancy of Curriculum

The new program reflects major changes in the curriculum in an effort to make the program more relevant and appropriate. These changes have not been made in isolation but after consideration of the social, political, economic and educational environment. The curriculum was also not copied. Planners were forced therefore, to look at the curriculum in a different and innovative way and the result was a curriculum that reflected the Bahraini reality.

The new curriculum, with its common orientation year, degree and diploma streams together, make-up courses after the diploma, and the work experience component, has been tailor-made for Bahrain. The process used in the creation of the engineering program at G.P. is perhaps the most important aspect in achieving a successful postsecondary technical and vocational institution.

In addition, the assessment and evaluation study was done by a joint Ryerson and G.P. team. Involving G.P. faculty in this process not only ensured more accurate results but also acted in the way of "training the trainer" by illustrating, for one thing, the processes of program review that should be carried out on an on-going basis to ensure the continuation of relevant programming. Relevancy continues to be checked through the establishment of Advisory Committees which directly involve industry in the programming at the polytechnic.

F. General Concerns with Technical and Vocational Education

- The criticism that technical and vocational education attracts a poorer quality of student was also addressed. In the past, technical education was seen as a second choice, attracting the students who failed to get into other programs. Today, technical skills are required at a very wide range, from the simple to the very complex. Even still, the stigma remains that only drop-outs go into these programs.

Through marketing of the programs at the secondary level, G.P. has the opportunity to "sell" the program and begin to break down the barriers against technical education. Also, the creation of a customized orientation year raises the quality of the student entering the first year of the engineering program. This customized year, which directly addresses the weakness of the students entering G.P. from both the academic and technical streams, is also unique to many other institutes.

G.P.'s approach of assessing and evaluating the structures supporting the institute, such as the ability of the secondary schools to graduate students who could succeed at G.P., led to changes at the secondary level that resulted in higher quality students entering the program.

- Another problem encountered in technical and vocational education was that even when students graduated from a technical program they often assumed positions outside their technical area. The new program at G.P., with its compulsory work component, gave students relevant practical experience and important industry contacts before their degree was obtained. This exposure to work in related industries, assisted in averting the loss of graduates to unrelated jobs.

Also, a program that is designed around the needs of industry allows for a more successful blending of educational achievements with industrial practice. That is, if the education is appropriate and relevant to actual workplace experiences, many more graduates will opt for their chosen careers.

- Bahrain spends a large portion of its GNP on education. Although not a financially struggling country, programs that are designed to be relevant, avoid duplication, that are of high quality, that attract high quality students, do not result in graduates leaving the country to obtain relevant jobs, or being forced to take jobs in unrelated fields, will ultimately lead to greater economic rewards for Bahrain.

- When institutions are undergoing a lot of changes, particularily within a very short time, whether in a developed or developing country, the quality of the offering is often sacrificed to quantitative expansion. Conducting an assessment and evaluation of programs, especially an external one aimed at ensuring quality and relevancy, is essential in enhancing the reputation of an institution. This ultimately leads to strengthening the acceptance of the institution and respect for the education delivery there.

- The program is also more egalitarian, increasing the technical secondary school graduates chance of succeeding. First through the customized orientation year which caters to upgrading technical students in academic subjects, and second in the new structure that combines the degree and diploma streams. Students who would not have been considered for the degree stream may now be eligible because the decision is made after the diploma is obtained not before.

5.3 Recommendations

In researching the country of Bahrain and the Gulf Polytechnic and its attempts to provide vocational and technical education, a number of recommendations become apparent. The review of associated literature, including the Ryerson Polytechnical Institute's study, assisted in the development of the following recommendations.

1. The existing reward structure within Bahrain guarantees a government job for all those holding a university degree undermines Gulf Polytechnic's ability to encourage technical and vocational education as a career opportunity. It also counters the Bahraini policy of increasing and encouraging student participation in technical and vocational education. The government of Bahrain must adjust its reward structure which focuses upon university graduates or expand the structure to include higher technical and vocational education.

2. The importance of credentialism must be recognized. Although G.P. might offer a first-rate technical degree because of the status afforded to university education students often choose the university credential over a superior technical program.

3. G.P. must continue to provide and emphasize the practical focus of its programs. The value of this area is critical to the success of technical and vocational education at G.P. To reduce or eliminate this feature would result in a more theoretical and conventional curriculum.

4. Major public and industrial promotion is required to build an understanding of the value of technical and vocational education and of the excellent program offerings at the G.P. in order to counter the prejudices that now exist. Increased public knowledge and support will be required to ensure the success of the institution.

5. The model for the engineering program at G.P. or more specifically, the process used to develop the model, should be shared with other countries. It is particularly applicable to developing countries, as its strength lies in its practical orientation, blending of work experience, internationally accepted curriculum, accommodating both degree and diploma in an integrated stream, and locally developed and maintained curriculum. Countries, especially those requiring practical "working" engineers and, in greater numbers, technicians and technologists, can adapt this model in order to more successfully promote and develop technical and vocational education.

6. Technical and vocational education can be successful but greater attention must be paid to the barriers that have prevented success in the past. One of the most important recommendations is that curriculum changes cannot be made in isolation from the social, political and economic environments that they exist in. Taking these areas into consideration in the development of a technical and vocational program greatly improves its chances of being relevant, appropriate and thus successful.

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APPENDIX 1

INTERVIEW GUIDE

BAHRAIN INTERVIEW GUIDE

1. Describe briefly your work in Bahrain.

2. Comment upon the status of technical and vocational education in Bahrain both from the point of view of the a) faculty and b) students?

3. Regarding your interviews with Bahrain industries, was G.P. supplying the type of graduates that they needed?

4. In meeting with government ministries responsible for education and training, what kind of skills did they require graduates to have?

5. Were manpower studies available to assist your research?

6. Were G.P. graduates able to secure employment in their areas of training?

7. What do you think about the dual policies of Bahrainization and guaranteed jobs in the civil service?

8. How was Bahrain able to apply the recommendations from your study?

9. What did you think about the decision to have the G.P. amalgamated with the University? Will the change be in name only? What curriculum implications do you see?

10. In your opinion, for Bahrain, how important is the role of education in development?